Provincial Sustainability Indicators

What You Told Us...

Protecting & Managing *our Future*

Manitoba Conservation

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Message from the Minister

To all Manitobans:

I am pleased to present to you the Provincial Sustainability Indicators — What You Told Us report. This report documents the public feedback on the proposed provincial sustainability indicators.

The results of the public participation process are being reviewed by the Manitoba Round Table for Sustainable Development. Based on the public comments and a technical review, the Round Table will recommend a final set of provincial sustainability indicators to government by July 1, 2001. Once an indicator set is approved by government, a Provincial Sustainability Report will be developed based on those indicators.

On behalf of the Manitoba Round Table for Sustainable Development, I would like to thank all those who graciously devoted their time and energy to the sustainability indicators public participation process. Your advice, suggestions and comments have been insightful and we will consider all of them as we prepare our final recommendations.

We are also grateful for the assistance provided to us by the Sustainability Indicators Working Group, and the community organizations and people who contributed their time in helping conduct workshops across the province.

Again, thank you for your interest, participation, ideas and comments.

Sincerely,

Oscar Lathlin

Minister of Conservation and Chair,
Manitoba Round Table for Sustainable Development

Acknowledgements

We would like to thank the following organizations and people for their contribution of time and energy to the public participation process for sustainability indicators.

Co-hosting community organizations:

- Brandon Economic Development Board – *Marlow Kirton*
- Healthy East and West St. Paul – *Laurie Holgate*
- Healthy Flin Flon – *Cathy Hynes*
- Healthy Thompson – *Catherine Spence*
- Healthy Winnipeg – *Anita Moore*
- Leaf Rapids Community Round Table – *Frank Bloodworth*
- Manitoba Conservation Districts Association – *Don Alexander*
- Morris Community Round Table – *Marc Dandeneau*
- Pelly Trail Community Round Table – *Dale Brown*
- Rock Lake Community Round Table – *Bev Leadbeater*
- Stonewall Community Round Table – *Ross Thompson*

Workshop facilitators:

- Sheldon McLeod, Laszlo Pinter – Winnipeg
- Grace Godmaire – Thompson
- Larry Bartlett – Leaf Rapids
- Margot Gray – Flin Flon
- Ian George – Morris
- Barbara Bragg – Brandon
- Eldon Montgomery – Russell
- Jack Lewis – Crystal City

Introduction

Background

The process of developing a set of provincial sustainability indicators began in July of 1998, with the passage of *The Sustainable Development Act*. Under part 5, sections 9 and 10, the province of Manitoba must establish a set of sustainability indicators by July 2001, and prepare a provincial sustainability report based on these indicators by July 2005. The Manitoba Round Table for Sustainable Development is responsible for preparing a draft set of indicators, consulting with the public on the draft indicators and submitting a report to the minister on a final set of recommended indicators and any related issues.

In order to meet these requirements, a 40-member Sustainability Indicators Working Group[1] was formed, with representation from all provincial government departments, the City of Winnipeg, Environment Canada and a number of non-government organizations in the province. The Sustainability Reporting Subcommittee[2] of the Manitoba Round Table for Sustainable Development oversaw the working group's activities.

Goal and Objectives

The goal of the initiative is to provide Manitobans with timely, accurate information on sustainability issues and trends, so that they can make informed decisions.

Objectives of the initiative are:

- to facilitate assessment of Manitoba's sustainability;
- to facilitate the establishment of provincial targets and policies for sustainable development;
- to provide a measure of performance in achieving provincial goals and objectives;
- to provide a framework for the Provincial Sustainability Report.

Indicator Development Process

The Sustainability Reporting Subcommittee of the Manitoba Round Table for Sustainable Development and the Sustainability Indicators Working Group agreed to the following process for indicators development:

1. form a working group
2. clarify purpose of indicators/initiative
3. identify values and vision
4. review existing models, indicators, data
5. draft a set of proposed indicators
6. convene a public participation process
7. perform a technical review of indicators
8. research the data
9. publish and promote the report
10. update the report regularly

The first working group meeting was July 14, 1998. It was agreed at this meeting to form a Core Team, consisting of eleven working group members to carry out preliminary discussions and decisions, and to use a workshop format for the full working group to review and refine Core Team proposals.

The second working group meeting was held December 17, 1998 in a workshop format. At this workshop, the Working Group agreed to a definition for sustainability indicators, a set of indicator selection criteria[3] and provided feedback on the preliminary set of indicators proposed by the Core Team.

The third working group meeting was held on Wednesday, February 16, 2000. The purpose of this workshop was to pare the existing set of over 100 proposed indicators down to a manageable set for the public participation process. Electronic voting technology was used to accomplish this. The indicator set was reduced to the fifty-two indicators that formed the basis of the public participation process

Public Participation Process

The strategy for the public participation process was to provide a grass roots focus and conduct consultations in cooperation with local community groups and

1 See Appendix 1 for a list of the Sustainability Indicators Working Group members.

2 See Appendix 2 for membership list of the Sustainability Reporting Subcommittee of the Manitoba Round Table for Sustainable Development.

3 See Appendix 3 for sustainability indicator definition and selection criteria

organizations. The Chair of the Manitoba Round Table sent a letter to Manitoba Healthy Communities Network, Community Round Tables and the Manitoba Conservation Districts Association. The letter invited organizations to co-host a workshop in their community. Each community organization that responded positively to the invitation was asked to suggest a facilitator from within their community.

A Sustainability Indicators Workbook was written based on the proposed indicators resulting from the working group process. This was the main discussion document for the public participation process. It presented the indicators within a framework of environmental, economic and human health and social well-being dimensions. Each dimension contained a series of categories, and within each category there was at least one sustainability issue, proposed indicator(s) to address that issue, information on data availability for each indicator and some ideas for possible linkages and interdependencies to other portions of the workbook. The workbook included a questionnaire and self-addressed stamped envelope, so that feedback could be provided in this format if people could not or did not wish to attend a public workshop. The questionnaire could also be used in conjunction with an individual's discussion/input at the workshop.

Pre-workshop communications included a government news release, newspaper articles, radio interviews, local and regional newspaper advertisements, flyers for community organizations to distribute, posters, Internet Web site, community contacts, and departmental branch contacts.

During June 2000, nine public workshops were held by Manitoba Conservation, co-hosted by local community organizations and facilitated by local community members. The workshops were held at the locations listed in the table below.

In addition to the public workshops and the workbook questionnaires, feedback could be provided through written submissions. As well, a fully interactive Web site was available, where the questionnaire could be answered on-line, and a discussion forum was provided where people could post comments and others could respond. A French translation of the workbook and questionnaire was available on-line.

Outcomes of the Public Participation Process

Over 2000 workbooks with questionnaires and self-addressed stamped envelopes were distributed. Thirteen workbook questionnaires, 4 written submissions, approximately 50 Web site comments and 1 Web site discussion forum posting were returned. Approximately 185 people attended the public workshops.

Public Participation Process – Workshop Locations

Date	Location	Co-hosting Community Organization
Thursday, June 1	Winnipeg	Healthy Winnipeg, Healthy East and West St. Paul and Stonewall Community Round Table
Tuesday, June 6	Thompson	Healthy Thompson
Wednesday, June 7	Leaf Rapids	Leaf Rapids Community Round Table
Thursday, June 8	Flin Flon	Healthy Flin Flon
Tuesday, June 13	Morris	Morris Community Round Table
Wednesday, June 14	Russell	Pelly Trail Community Round Table
Tuesday, June 20	Crystal City	Rock Lake Community Round Table and Manitoba Conservation Districts Association
Thursday, June 22	Brandon	Brandon Economic Development Board
Tuesday, June 27	Winnipeg	Healthy Winnipeg, Healthy East and West St. Paul and Stonewall Community Round Table

What You Told Us - Presentation Structure

Feedback from all mediums of the public participation process has been compiled into this "What You Told Us" document. The document is presented in the same framework as the workbook. There are three dimensions — environmental, economic and human health and social well-being — with related categories in each dimension.

Each category presents written comments on the issues and indicators gathered through the workshop process, staff notes on issues discussed or questions asked that weren't reflected in the notes from workshop participants, followed by feedback from the questionnaire and Web site respondents.

The final section of the Provincial Sustainability Indicators – What You Told Us includes written submissions.

The Workshops

Winnipeg #1: June 1, 2000

- Drew people from East St. Paul, Lac du Bonnet, Ottawa, Stonewall, West St. Paul.
- 31 attendees including the community facilitator and community organization hosts.
- All three dimensions discussed, two breakout groups for environment and human health and social well-being dimensions, one for economic dimension.

Thompson: June 6, 2000

- Drew people from Thompson and The Pas.
- 16 attendees including the community facilitator and community organization host.
- All three dimensions discussed, one breakout group for each.
- 4 people discussed the environmental dimension.
- 5 people discussed the economic dimension.
- 6 people discussed the human health and social well-being dimension.

Leaf Rapids: June 7, 2000

- Drew people from Leaf Rapids, Lynne Lake and Thompson.
- 11 attendees including the community facilitator and community organization host.
- All three dimensions discussed, one breakout group for each.
- 3 people discussed the environmental dimension.
- 4 people discussed the economic dimension.
- 3 people discussed the human health and social well-being dimension.

Flin Flon: June 8, 2000

- Drew people from Cranberry Portage, Creighton, Flin Flon and The Pas
- 22 attendees including the community facilitator and community organization host.
- All three dimensions discussed, one breakout group for each.
- 8 people discussed the environmental dimension.
- 7 people discussed the economic dimension.
- 6 people discussed the human health and social well-being dimension.

Morris: June 13, 2000

- Drew people from Altona, Morden, Morris and Winnipeg.
- 11 attendees including the community facilitator and community organization host.
- The entire group chose to discuss the economic dimension.

Russell: June 14, 2000

- Drew people from Birtle, Grandview, Roblin, Russell and Swan River.
- 8 attendees including the community facilitator and community organization host.
- Remained in one group and gained consensus to discuss the following categories from all three dimensions: biodiversity and habitat conservation, water, forests, agriculture and food, energy, demographics, community and culture, health and justice. However, the group didn't have time to discuss the justice category.

Crystal City: June 20, 2000

- Drew people from Bruxelles, Cartwright, Clear Water, Crystal City, Manitou, Miami, Morden, Notre Dame, Pilot Mound, Snowflake, Swan Lake, Winkler and Winnipeg.
- 38 attendees including the community facilitator and community organization hosts.
- All three dimensions discussed, one breakout group for each.
- 13 people discussed the environmental dimension.
- 12 people discussed the economic dimension.
- 12 people discussed the human health and social well-being dimension.

Brandon: June 22, 2000

- Drew people from Brandon, Carman, Neepawa, Shoal Lake, Virden
- 18 attendees including the community facilitator and community organization host.
- All three dimensions discussed, one breakout group for each.
- 5 people discussed the environmental dimension.
- 7 people discussed the economic dimension.
- 3 people discussed the human health and social well-being dimension.

Winnipeg #2: June 27, 2000

- Drew people from East St. Paul, Ste. Agathe, Selkirk, West St. Paul and Winnipeg.
- 31 attendees including the community facilitator and community organization host.
- All three dimensions discussed, two breakout groups for the environmental dimension, one each for economic and human health and social well-being dimension.
- 16 people discussed the environmental dimension.
- 5 people discussed the economic dimension.
- 8 people discussed the human health and social well-being dimension.

Workshop, Questionnaire and Web Site Public Comments

Note to Readers: In the comments section of the document, square bracketed words have been added by staff to clarify comments.

ENVIRONMENTAL DIMENSION

1.0 Biodiversity and Habitat Conservation

The biodiversity and habitat conservation category deals with the health of habitat for wild plants and animals as a measure of our efforts to conserve biodiversity. It also deals with the status of public lands, whether they are protected from development; the health of ecosystems and the ecological services provided our society from public lands.

1.1 Issue: Natural lands and protected areas

Manitoba's natural lands play an important role in sustaining life and preserving biodiversity. Conservation of lands in a natural state is essential for plant and animal health as well as for human well-being. It is important to track how much land is designated and protected in Manitoba. How well Crown lands are managed and protected determines whether ecosystems can sustain their functions and the plants and animals that live there. The final indicator(s) for this issue should give us an overall picture of the natural lands designated or protected and ecosystem health, representation of natural regions and enduring features, impacts from development, and maintenance of ecological integrity.

Public Comments:

- Consider habitat variations between natural regions.
- Site selection process must be more reflective of ecozones.
- Not true enough to be accurate.
- Land management: economic development versus environmental development.
- 12% of all ecosystems in province to be left in state.
- Conservation of land outside of park: no economic analysis to see what differences are.
- Economic importance [needs to be recognized].
- Hard to judge, as we know our area and we are not aware of other areas of the province.
- Wildlife management areas are not managed properly, not managed for wildlife. We are not managing the land we have now.
- More protected areas will hurt farmers as they have to feed the wildlife.
- Government should do more for parks in Pembina Valley. Right now there is no park in the Pembina Valley.
- Add another issue – 1.1(c) Proportion of productive land protected. Land conversions in both directions, restoration.

1.1(a) Indicator: Total designated and protected land

This indicator refers to the number of hectares of Crown land in Manitoba designated as parks, park reserves, ecological reserves, wildlife management areas and provincial forest, and their level of protection. Logging, mining, hydroelectric development and oil and gas exploration are prohibited in protected areas. Various Crown land designations are also protected areas. Other activities that may significantly affect habitat are also restricted in protected areas. This indicator would tell us whether we are completing Manitoba's Network of Protected Areas, as identified in the new Parks Act, and the provincial Action Plan for a Network of Protected Areas through the Protected Areas Initiative, a program of Manitoba Conservation.

Degree of representation of Manitoba's natural regions would be examined as well. A natural region is a geographic area that has similar landforms, soils, geology, climate and vegetation. Degree of representation of Manitoba's natural regions is based on the protection of enduring features in protected areas in a network for all of Manitoba's natural regions. Completing our network of protected areas, and achieving representation of our natural regions will provide habitat for most of our wild plants and animals. Maintaining the ecological

integrity of our protected areas will also mean we are protecting our landscapes and ecosystem functions. The representation indicator will tell us how we are doing by enduring feature, by natural region, and overall in completing our network of protected areas. This method to plan and assess protected areas has been used in Manitoba for several years.

Public Comments:

- [Track] covenants with private owners.
- [Track] landscape connectivity and corridors, buffers.
- [Track] road removal and building.
- [Track] riparian zones, width and extent, and loss of corridors.
- [Track] pesticide usage.
- Too all encompassing, not specific enough. No yardstick.
- Flip-flop [the] indicator [to produce an] alternative indicator: Hectares/percentage of "protected lands" which have been "re-zoned" for development.
- [Measure] number of hectares: no because percentage of hectares protected needs to be increased. Need to preserve more of what's left, expand the target percentage, include different kinds of habitat.
- [Measure] health of the land preserved, i.e. fire, living trees, wildlife: biodiversity.
- How is the land protected from outside influence, i.e. mining upstream, mines/forestry within area?
- Need for a target level of protected areas.
- Excludes agro-Manitoba.
- Must know what we have – eco-regions, e.g. mixed grass prairie, what is designated already.
- Get a baseline, use existing data sources.
- Will this take into account land already protected by conservation agreement? Need to integrate bits of information, include private sources.
- Crown land already classified, but quality treatment needs to be known also, e.g. heavily grazed, etc.
- Agricultural land use changes can provide important information.
- If the public wants land protected, should bear at least part of the costs.
- Ensure protected areas are not only northern/inaccessible lands.

1.2 Issue: Habitat loss

The greatest threat to wildlife species and biodiversity is habitat loss. One of the main causes of this loss is impact from human activity. Prohibiting development and limiting human activities in protected areas is essential to protect habitat. It is important to know the condition of protected areas and whether they are under stress from development. Minimum impact from development on designated and Crown lands will also maintain habitat. Many of Manitoba's natural Crown lands are used for a variety of purposes, but not all of these uses are compatible with wildlife habitat. Many feel that regardless of other measurable values, our natural and protected lands have an intrinsic value to society. We are only learning to put quantitative value to ecological and ecosystem services. The final indicator(s) for this issue should give us an overall picture of the success or failure of our efforts to reduce habitat loss and fragmentation, while maintaining our protected areas and conserving biodiversity on public lands.

Public Comments:

- [Measure] degree of representation.
- Yes [this is a key issue to track], because it is measurable, [but] may be overemphasized.
- Development is not all bad.
- Totally leaving things to nature isn't always good or the best use of resources.
- Development has a broad range.
- Combination of reasons for habitat: for people to enjoy and appreciate, and for nature alone.
- Some development should be allowed.
- If some species require no development then that should be respected.
- Hydro precedes development.
- Binney Corner Park a good example of developed natural area to understand and appreciate wetlands, environment, etc.
- Hydro lines - fringe areas open up habitat.

- Logging roads and roads in general split habitat and make previously inaccessible areas accessible.
- Use of habitat: is use limited, such as West Coast Trail. In Whiteshell, only so many new lots [are] opened per year. Certain areas [are] more used than others.

1.2(a) Indicator: Pressure from development

Our open Crown lands, designated and protected areas often are impacted by development activities. This indicator will measure intact ecosystems, designated and protected areas by identifying roadless areas over time. Degree of fragmentation – amount of roads and corridors – can be measured and compared so we know whether roadless areas are being maintained. Roadless areas provide the greatest likelihood for survival of many species and hence Manitoba's biodiversity. Fragmentation of our natural landscapes disrupts species migration patterns, allows over hunting, changes natural predator patterns, and often reduces drainage and water services. Significant fragmentation also reduces forest or grasslands biodiversity overall. The kilometres of roads and corridors would be calculated in square kilometres and square hectares so that roadless areas status can be compared. The trend over time should tell us whether we are successful in maintaining habitat, minimizing impacts from roads and corridors in protected areas, open Crown lands, and designated lands. This measure of pressure from development can be applied to natural regions, watersheds, and specific areas on a comparative historic basis.

Public Comments:

- Ecosystem function, health, integrity [are] at different scales [and all need to be reflected].
- See Sustainable Forest Management: Criteria and Indicators [report].
- [Use] index of biotic integrity.
- [Need] indicators specific to Manitoba: specific indicators for Manitoba habitats, ecosystem health indicators, apply a set of indicators to each habitat.
- Strengthen land development/undeveloped ratio indicator (square hectares of road) to include harvested areas, burnt areas, tailings areas, etc. Use land satellite imagery to calculate, ecozone specific.
- Need to include protected areas and limit development.
- Need to increase percentage of protected land to limit development.
- Alternative indicators: species counts/regular monitoring.
- [Measure] health and well-being of plants and animals.
- Number of hectares not a good indicator of biodiversity, must be quality, not quantity.
- If left alone ecological zones will not stay the way we want them without some kind of intervention.
- Will always reach a new balance.
- Roads may be not a good indicator for southern Manitoba. Better indicator – amount of trees, wetlands or riparian zones.
- Degree of fragmentation important to know.
- Roadside ditches, road allowances important to [measure and] preserve for some wildlife habitat, plants etc.
- Re sources of information: useful information from non-government groups as well, e.g. Manitoba Naturalists Society, State of the Environment, Ducks Unlimited, universities, etc. for comprehensive picture.
- Loss of wetland [needs to be tracked].
- Amount of roads as an indicator is too limiting.
- Is there a measure of inaccessible areas of land? Depends on species location. How can we measure this?
- [Track] land use changes.

General workshop comments for biodiversity and habitat conservation category:

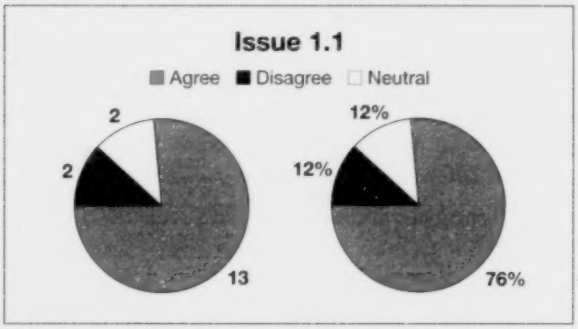
- Indicators [should be presented] regionally and locally as well as provincially.
- [Need] private land indicators too.
- Climate change and ozone [will occur] regardless of development.
- Economic development is not equal to environment.
- Sustainable development as an oxymoron: how do we compare developed land to undeveloped land when it is all developed.

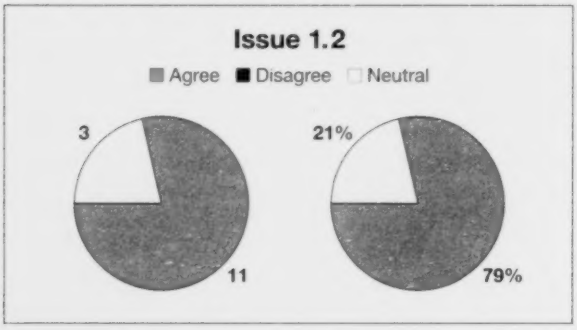
Staff workshop notes of public comments and questions not reflected in participants notes:

- Landowners shouldn't have to bear the burden of preserving land for, e.g. endangered species
- Natural lands and protected areas: hectares are meaningless unless goals are attached to each specified land use. Wildlife management areas etc., otherwise a bad indicator.
- Develop greenspace ratios for all municipalities for non-consumptive extractive uses.
- Pressure from development: roads "score" goes down without ethic tied to it. Maybe requires a desirable target. Degree of fragmentation should have an upper limit or target.
- Incentive or reward system to promote preservation of private land.

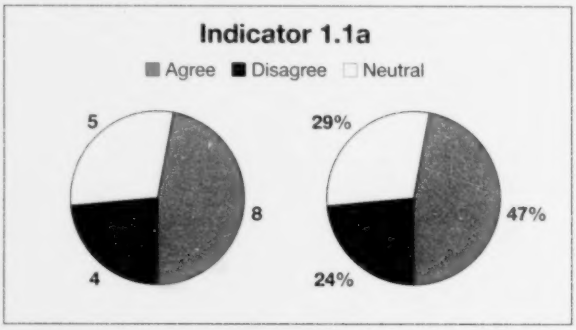
Questionnaire Responses:

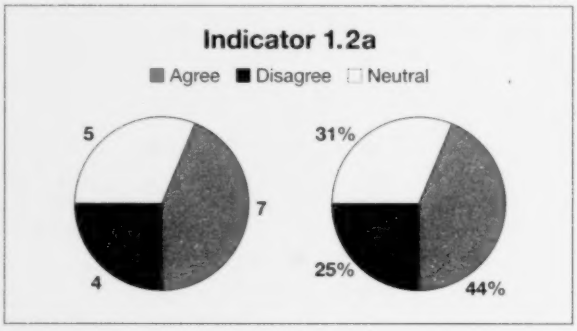
Do you agree that the issues presented in the biodiversity and habitat conservation category are the key areas to track to help determine sustainability in Manitoba?





Given the indicator selection criteria, do the proposed indicators sufficiently address the issues?





Are there alternative indicators that would better represent the issue, if so, which ones could be replaced and why?

- No. While the amount of land protected is important and appealing, it is not nearly as important as the type of land protected. Therefore, it is more important to suggest that ecological areas that are in decline because of anthropogenic activity should be protected rather than meeting a quota of 12% of Manitoba land being protected (for example). Crown land and private landowners include indicators focusing on private land ownership and track that over time.
- Also need to determine the amount and rate habitat loss. Can be done with satellite imagery with comparisons [over] years.
- Lands protected by covenants. This would be a measure of "acceptance" of sustainability, and should increase over time.
- Generalize – not only "Crown".
- The linkage to sustainability is not well made in the "issue".

- Total designated and protected land is a good indicator but degree of representation of natural regions has to be built into the indicator.
- You need to also rate the quality of the protected areas. We may have a bunch of land, but could be poor quality.
- You need to track the changes in amount of agricultural land in the south as this has major implications to biodiversity.
- Not knowledgeable enough to make comment here.
- Total does not ensure adequate representation of key features – need designated and protected land by ecozone or similar classification.
- "Fragmentation of key natural areas" - rest we don't care?
- Proposed indicators for Habitat Loss should be actual species diversity – are we losing key species such as sturgeon, snapping turtle.
- Is our natural resources database complete enough to know?
- A management criterion is lacking. What about protection of wildlife in surrounding areas – as wolves just outside parks?

Do you have other comments on the biodiversity and habitat conservation category?

- Loss of habitat may be fine in some areas and extremely harmful in others – just comparing space protected in time does not qualify this space – it needs to be the correct space protected. Also, some uses of space may be good and others detrimental – you haven't qualified your use of space. We are within Crown lands yet there is a move afoot to allow cutting for pulp and paper without clear management practices to be used? So what good is saying Crown lands are protected if this can happen?
- It is important to keep in mind that an ecosystem is a dynamic system and not a static one. Therefore, we would expect a change in the data over time – sometimes less biodiversity and sometimes more biodiversity. Remember, also, that disturbance events such as fire (large scale) and burrowing animals (small scale) plays an integral role in determining the structure of an ecosystem. Protecting a patch of land that is similar in composition and permitting development or industrial activity on nearby land can still significantly affect ecological composition within the protected region because disturbance events could be reduced or eliminated. This is one of the major criticisms of the park ideology. We must keep in mind the holistic nature of the environment. This does not mean to suggest that we should not permit any industrial activity, since people's livelihoods are at stake. However, we do need to keep this holistic nature in mind so that we can better select the regions to protect because all cannot be protected. Finally, it is important to take into consideration possible alternatives to a proposed project, which may be less damaging to the environment. The government of Manitoba needs to maintain and improve the environmental integrity of companies looking to extract our resources, which must be outlined in an environmental assessment prior to excavation.
- Right from the start of this process I have been concerned regarding the impact to northern areas. As most of the land mass we are speaking about is in undeveloped Crown lands which is in the northern part of our province. I appreciate the spirit of this endeavor but caution that we not only look at someone else's back yard and not that of our well developed southern portion of Manitoba. Lines have been drawn in the south because there is where the population is. The north will never develop if a fence is placed around it and a sign is erected This is a special place, stay out.
- Both issues of Natural Lands and Protected Areas and Habitat Loss fail to examine private land ownership and how that land is managed with respect to protected areas and habitat loss. Public goods on private land key.
- Why "the"? [as in "the key areas to track" in the issue question].
- It is not necessarily axiomatic to some people that more designation, more representation will help to leave the desired legacy to future generations. Perhaps this is more self-evident in the environment section than elsewhere in the workbook – i.e. the assumption is part of the general "gestalt" of a Manitoban. For safety, however, each issue statement should be scrutinized and the linkage made or the assumption stated.

- Degree of representation should be a separate indicator from total designated and protected land.
- For issue of Habitat Loss, a useful measure of movement towards a "sustainability outlook" would be the deliberate effort to create habitat – farmers "set-asides", D.U. projects, Conservation District habitat creation, etc. Even bald acreage changes over time would be useful.
- Access may be over emphasized.
- How does this relate to "human health services from our natural lands" and what does this mean?
- Also important is the diversity in areas shared by human development – such as wildlife in cities and on farms.

2.0 Wildlife

The wildlife category deals with the health and quantity of wild plant or animal species.

2.1 Issue: Species diversity

Wildlife species in Manitoba include those that are found naturally or have existed in the province for a long period of time. Of these species, some may be classified as threatened or endangered. Keeping track of key plant and animal species, where they are located, and how abundant they are can help indicate the health of our ecosystems. Fluctuations in populations of wild plants and animals are common. Disease, weather, temperature extremes, naturally occurring fires, competition among species, predation, and exotic nuisance species all affect wildlife populations and species diversity. The final indicator(s) for this issue should give us an overall picture of health of the province's wildlife. Wildlife links strongly to biodiversity and habitat conservation.

Public Comments:

- Good species diversity in southern Manitoba.
- Protection not for public viewing alone, and should be thought of as a goal on its own [species diversity].
- The system encourages bad land practices. No incentive to save natural areas. There are incentives to do the wrong thing.
- Fur trade drop has discouraged trapping of raccoons, porcupine and beavers.
- Canada Geese could become a problem to farmers.

2.1(a) Indicator: Distribution of indicator and exotic nuisance species

This indicator would track those species whose relative presence or absence "indicate" that certain conditions prevail. These indicator species can be used to monitor how much of a certain factor is present. The indicator would also examine threatened and endangered species, migratory birds, under and over population of species, and exotic nuisance species. Exotic nuisance species are non-native species that have moved in or been introduced from other places, and are competing for food and habitat or negatively affecting native species. Tracking exotic nuisance species is important because they don't usually have natural predators in their adopted homes. A comprehensive list of indicator species is yet to be developed in Manitoba.

Public Comments:

- [Are there] natural baselines [that can be used here]?
- [Include] mussels.
- [Include] knowledge indicators, scientific and traditional environmental knowledge.
- Species list: abundance, threatened, rare, extirpated, provincial, regional, populations, reintroduced species.
- [Measure] number of endangered/rare species by habitat/ecosystem.
- [Include] land use changes.
- Use COSEWIC species as indicator species for diversity.
- Set yardstick.
- Use species diversity also [as] an indicator [of] habitat loss.
- Data availability, limited resources for monitoring result in reactive process. Need to be proactive – catch problems earlier.
- Need to choose indicators species.

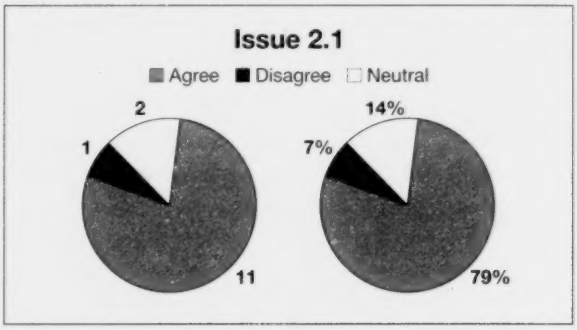
- Need to do increased population counts. Only reported every five years.
- Include the health of species.
- Need goal oriented indicators. Prioritize indicators with goals for each. Which are the indicator species?
- Agree on predation, indicator species and exotic nuisance species. Weeds, etc.
- Need to add microorganisms: bacteria, fungi, etc. Essential in soil processes.
- Lots of concern [that] only current indicator proposed is indicator species and exotic nuisance species. As no list has been developed this will take considerable time.
- Nuisance species – again, problem of natural cycles or nuisance. Need to differentiate.
- Suggestion: quadrant species count (such as Christmas bird count).
- Bird banding by organizations [use as data source].
- [Use] Manitoba Wildlife Branch surveys of various species.
- Exotic species – not just presence, but also numbers, e.g. purple loosestrife and zebra mussels.
- How do we decide what is a nuisance?
- Include Shannon Weaver Index.
- [Use] toads/frogs as indicator species.
- Agricultural lands are habitat along with shelterbelts, riparian zones, etc. They are being threatened.

Staff workshop notes of public comments and questions not reflected in participants notes:

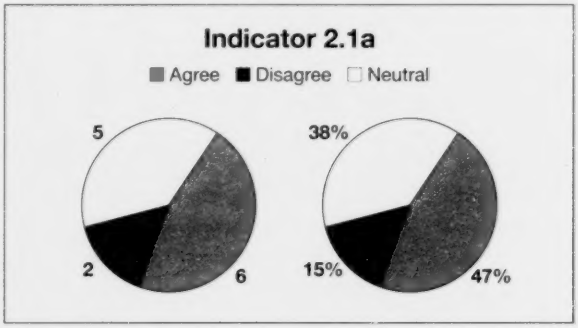
- Spraying of pesticides going into areas that contain wildlife and impacting them.
- Gun control disastrous to wildlife: licensing kept control of how many species are there. Number of licences going down because of gun control.
- Should specifically track the range of abundant, rare, extirpated, re-introduced, regionally and locally.

Questionnaire Responses:

Do you agree that the issues presented in the wildlife category are the key areas to track to help determine sustainability in Manitoba?



Given the indicator selection criteria, do the proposed indicators sufficiently address the issues?



Are there alternative indicators that would better represent the issue, if so, which ones could be replaced and why?

- Drop "exotic nuisance species" and instead track population levels.
- Industry should also be included, not just mining, forestry, etc.
- Other sources: federal – Parks, DND, Brandon University, U of MB, etc.
- "Indicators" [species] difficult [to select and track]. "Nuisance" [species are] probably [more] easily identified.
- There must be something better but perhaps if indicator species can be identified.
- You have to verify that the indicator species used are the right models for species diversity.

- You need to measure the basic processes that allow for diversity (i.e. nutrient cycles, reproduction, age and sex composition).
- As above, we need to measure the ability of wildlife to live in human altered environments.

Do you have any other comments on the wildlife category?

- Human impact on threatened, endangered species should also be monitored, and correlated with population trends to see if/what the relationship is.
- Indicator must be based on good science and not anything else (i.e. environmentalists)
- Measures to control or not the exotic species not mentioned.
- Be cautious! I don't think eco-system and e. integrity is sufficiently advanced to pull out good indicators.
- Why – from aspect of sustainability – should we bother to track diversity? You needn't explain the whole yard! But there are many people who regard wildlife diversity as contrary to "instinctive" abhorrence of wild beasts. Shoot the wolves! Hunt the bear! Get back to nice orderly monocultures and forget – or kill – the plants in the ditch! Also be careful – in a field of corn, anything other than corn is a nuisance!
- I also think your reading on diversity has been a bit light. The issue needs a re-write.
- Question whether Department of Conservation can supply data to show accurate trend.
- Add "subsistence hunting" and "income in kind" to the Human Health and Social Well-being circle (Linkages).
- Looking at "under and over population of species" definitely required. Also tracking of "exotic nuisance species".
- Uncertain that data will actually be complete enough to be useful.
- The indicator is too vague and undeveloped.

3.0 Air

The air category deals with the quality of air, including cross-border air issues.

3.1 Issue: Air quality

Good air quality is key to the health of all life. Manitoba generally enjoys excellent outdoor air quality and problems tend to be localized. The main sources of pollutants are industrial and agricultural operations and vehicle emissions. A variety of chemicals create smog and acid precipitation, damage the stratospheric ozone layer and increase the ability of the atmosphere to trap heat. Stratospheric, or upper atmosphere ozone filters out most of the sun's harmful ultraviolet (UV) radiation. Until the late 1980s, aerosols, propellants and refrigerants typically contained chlorofluorocarbons (CFCs). Once released into the atmosphere, these chemicals broke apart and formed other compounds, which caused the stratospheric ozone layer to thin. CFCs are also greenhouse gases, along with carbon dioxide, methane and others. Greenhouse gases trap the sun's heat and scientists believe these gases are responsible for changes in the world's climate. Sulphur dioxide, a pollutant from industrial sources, is responsible for acid precipitation. Indoor air quality meeting national standards is currently not tracked. The final indicator(s) for this issue should give us an overall picture of our efforts to deal with air quality problems.

Public Comments:

- Indicator limited to Winnipeg and Brandon. Need rural AQI too!
- Acid precipitation is not a problem in rural Manitoba.
- Chemical sprays are a problem.
- Pollen can be a problem for air quality.
- No refined petroleum in Manitoba.
- Morden had problems with lagoon (city sewage) odour for three weeks.
- [Work]book emphasizes urban air quality. What about rural?
- Air quality is well-monitored, badly enforced.

3.1(a) Indicator: Urban air quality index

The AQI is a system for reporting on air quality in cities, where most serious air quality problems exist due to vehicle emissions. The index considers four common pollutants that can affect human health or the environment. They are carbon monoxide, inhalable particulates, nitrogen dioxide and ground level ozone. Individual pollutant levels are measured hourly and compared to provincial air quality standards. The AQI is currently tracked only in Winnipeg and Brandon. Most provinces use an AQI to track air quality in their major cities.

Public Comments:

- [Include] air related disease (indoor and outdoor).
- [Include] efforts to reduce private vehicle use e.g. park and ride.
- [Track the amount of] emissions monitoring and reporting as condition of [doing] business.
- Indicator [is] limited to Winnipeg and Brandon, need rural AQI too, including smelter emissions (acid rain, metals fallout), nuisance odours, oil wells (H_2S, SO_2). Numbers are collected by industry, so results need to be confirmed by government.
- What about rural?
- [Include] indicator for SO_2: monitor the health of people living in the area through epidemiological studies, monitoring acidity of lakes downwind from smelters.
- In rural areas the indicator doesn't cover a lot of the problems, e.g. aerial spraying.
- Intensive livestock operations can impact air quality.
- [Measure] dust, smoke [complaints].
- [Include information on] expanding hog industry, lagoons and spreading manure.
- Trains to trucks equals more pollution.
- Rural areas: spraying of pesticides, herbicides, odour problem, especially with the increase of hog barns.
- This would be a good indicator.
- We don't have rural air monitoring in the workbook.
- Why is Carman monitoring air quality for Winnipeg?
- Canadian Lung Association – increase or decrease in air associated ailments, e.g. asthma (use as a data source).
- Hog farm stench – problem with this in the province.
- Winnipeg pollution moving to rural areas. How do we measure this?

3.1(b) Indicator: Greenhouse gas emissions

Greenhouse gases include carbon dioxide, methane, nitrous oxide, CFCs and ground-level ozone. This indicator would tell us the amount and type of greenhouse gases emitted, which sectors release the most, and how we compare to other jurisdictions. Possible related climate trends and adaptation efforts would be discussed in the analysis. Emission levels would be related to Canada's internationally agreed upon reduction target and 1990 baseline level, established to address the issue of climate change.

Public Comments:

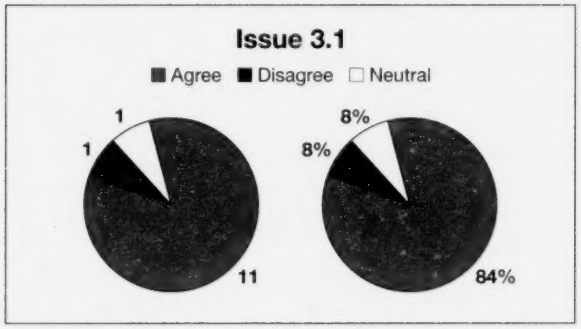
- [Track] CO2 emitters.
- [Track] petroleum/non-CO_2 emitters.
- [Track] fuel efficiency of Manitoba vehicles.
- [Indicators needed for] CO_2 sequestering – carbon balance.
- Encourage electric cars/natural gas.
- Encourage commuting/decrease car use.
- [Measure] number of cars (going up or down).
- [Measure] cycling/walking trails and paths.
- [Track] convenience of commuting/public transportation.
- Other indicators: airborne/toxicity in animals, i.e. cadmium in moose livers mercury in fish/PCBs in polar bears mother's milk.
- Flooding of forests.
- Greenhouse gas issue a non-issue as Manitoba is the lowest offender, thanks to Manitoba Hydro generation by water.

Staff workshop notes on public comments and questions not reflected in participants' notes:

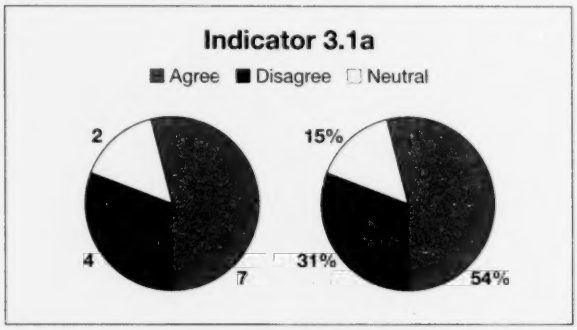
- Full carbon accounting required – they do it in Russia.
- Particulates under 10 not being monitored but are the most important to our health. We need this indicator. It is important to concentrate on what we need, not just what we have.
- Agree with measuring greenhouse gas emissions.
- Indoor air quality missing.
- Need to track noise/sound level pollution, e.g. beltway noise: highways and roads.
- Rural air quality monitoring lacking. Enforcement and follow-up programs an issue.
- Air pollution prevention methods should be reported.
- Air quality: monitoring station in Winnipeg on top of a three or four story building. Location must be meaningful in order to get accurate readings that represent the true air quality for people in the area. Need more sampling locations and more meaningful sampling locations.

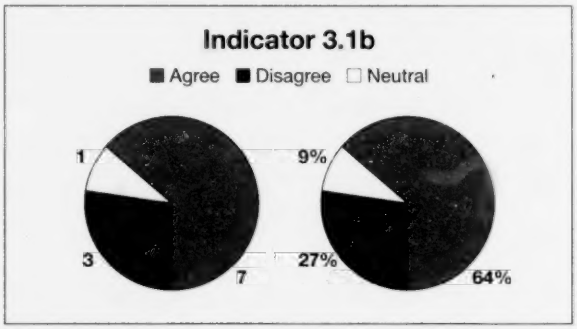
Questionnaire Responses:

Do you agree that the issues presented in the air category are the key areas to track to help determine sustainability in Manitoba?



Given the indicator selection criteria, do the proposed indicators sufficiently address the issues?





Are there alternative indicators that would better represent the issue, if so, which ones could be replaced and why?

- Manitoba is more than Winnipeg and Brandon. Thompson's air quality! Rural air quality re: stubble burning. Brundtland Report key.
- Change chemical contents of emissions rather than control amount of emissions.
- CFCs and possibly other gases, can be separated and specially tracked as indicators.
- You should develop a Rural Air Quality Index as a baseline.
- With increased hog barns in southwest Manitoba, air odour will be important to track.
- What about rural emissions of methane, NO [nitric oxide] from agricultural production and fossil fuels used in mining operations?
- What about Pb [lead] and Mn [manganese] along major transportation routes, pesticides in high production of specialty products?
- Missing is rural air quality, particularly around hog barns.

Do you have any other comments on the air category?

- Indictors or indices are fine for benchmarking and navel gazing. What do we do in Manitoba from a process standpoint to address target reductions? How do we balance the mid-west corridor plans and 'hog heaven' aspirations of this province with the real threats to quality of life indicators set out in this homepage?
- How do the proposed indicators account for cross border pollution? What do we do with information that's collected? Establishing a baseline is important, i.e. clean up the contents of gas, diesels, oils, etc.
- An easier indicator to get than most – number of motorized vehicles not emitting CO_2 over number of vehicles emitting CO_2: from vehicle registration data, on an annual basis. In addition, we need a performance-based indicator for each major industrial plant – e.g. days above standard compared with days below. Usually, there is a prescription to provide this in each license – or there should be!
- I have no idea who or from where this data is collected and therefore, a low level of trust.
- Why do you mention the "indoor air quality" but not see it as something that requires a standard for our "human health and quality of life"?

4.0 Water

The water category deals with the quality, quantity and use of surface and groundwater supplies.

4.1 Issue: Water quality

The quality of Manitoba's water is a growing public issue. Good quality water is important to sustaining life. Despite Manitoba's record of good water quality management, there are regions where water quality is deteriorating. Water quality can vary, affecting its use and value, and the health of living things that use it. Inadequately treated water supplies can increase the risk of communicable disease. Groundwater can become contaminated from various activities. The final indicator(s) for this issue should give us an overall picture of the quality and use of surface and groundwater in Manitoba.

Public Comments:

- Health of aquatic ecosystems [important] – health, policy.
- Provincial hierarchy of water usage.
- Call it "water and wetlands".
- Need lots of monitoring.
- [The issues around water that need to be tracked are] water consumption, quality and export.
- Charging a price for having water tested [is an issue]. If the water testing was free then more water would be tested and tested on an ongoing basis.
- Compounding factor, need more labs for more testing.
- Provide grants to people with livestock to build fences and make dugouts for farmers to keep livestock away from contaminating rivers.
- Tri Lakes development kiboshed by federal review. Should be looked at in the interests of the area. Water quality is a concern for the Tri Lakes.
- Drainage okay, but holding water requires an environmental review. Increased drainage results in more sedimentation and advanced lake eutrophication.
- Agree with the need for testing.
- Septic fields still sited in improper places – affecting water quality.
- Rural water quality can be very low and saline.
- Water quality on reserves poor.
- Ste. Agathe - Artesian well excellent water.
- Chemicals added to water, chlorine, fluoride, how does this affect quality?
- Department of Fisheries and Oceans concerned about water quality of Lake Winnipeg.

4.1(a) Indicator: Manitoba water quality index

The index uses 25 variables to assess water quality in Manitoba. Water quality objectives that have been set for these variables include bacteria, dissolved minerals, suspended sediments, plant nutrients related to eutrophication, toxic materials, trace metals and agricultural chemicals. The premise of the WQI is that water quality is excellent when all guidelines or objectives are met. With each failure to meet objectives, water quality declines. Water quality is rated for human consumption, aquatic life and wildlife habitat, irrigation, livestock and recreational purposes. The WQI is monitored across the province and can be compared across Canada. The quality of groundwater is also very important to track, as about half of the province's 300 municipal systems use groundwater supplies. Groundwater that supplies municipal systems is sampled routinely. However, outside of special studies, private wells are not tested on a regular basis. These studies will be included in the analysis, if possible.

Public Comments:

- Water and wetlands: area/extent of water recharge.
- Wetlands areas – benchmarked historically.
- [Track] degree/state of naturalness of water courses (percentage of rivers that are altered).
- WQI is a good indicator, but the classifications/results are not universally accepted by all groups (e.g. Northern Flood Agreement communities).
- Need more monitoring.
- Increased coliform levels need to be monitored and maintained within levels, i.e. indicator was coliform level but they're not acting on them. How many times do you have to report an elevated level of coliform? Could be an indicator.
- Increased dissolution at five lakes in Manitoba. Indicator could be an increase in number of lakes.
- Limit fertilizer/pesticides close to water source.
- More consistent testing of water quality.
- Need to ACT on the indicator.
- Pollution prevention: how many municipalities have proper sewage systems?
- Expansion of private wells poses a problem with private tests and ownership of data.
- Need for tests on a widespread basis.
- Measure water quality at homes. Report on this.
- [Measure] hog farms per square mile and livestock in general.
- [Measure] number of people upset about water quality issues.
- Indicator when children can't swim or breathe fresh air.

4.2 Issue: Water quantity and use

While Manitoba has an abundance of good quality water, it may not always be available where and when it is needed and in the amounts required. Rates of water consumption in Manitoba are high, even in comparison to other provinces. As good water supplies become scarce, the need to conserve water increases. Increased economic activity will place more demands on water and could affect water quality. Water quality, quantity and use need to be considered together to get a full picture of the state of water resources in the province. The final indicator(s) for this issue should give us an overall picture of whether our efforts at conservation and efficiency have reduced water consumption and ensured a supply for future generations.

Public Comments:

- Fluctuating water levels have certain impacts, need to measure trends.
- Odd and even day watering.
- Water licensing process [an issue].
- Irrigation [a water issue].
- Some licences not being used, other water being used without a licence.
- Need policy re wetlands.
- [Are there] priorities re water usage?

4.2(a) Indicator: Water consumption

This indicator refers to the amount of water that flows through the province's municipal water systems annually, expressed as a percentage of available supply. The total amount consumed would be divided by the population served to get the per capita amount consumed. Water consumption includes water used by homes, schools, hospitals, businesses, and industries. The price of water paid by consumers would be examined in the analysis of this indicator. The indicator does not provide information on individuals using private wells. Information on water quantities in the province would be presented if possible.

Public Comments:

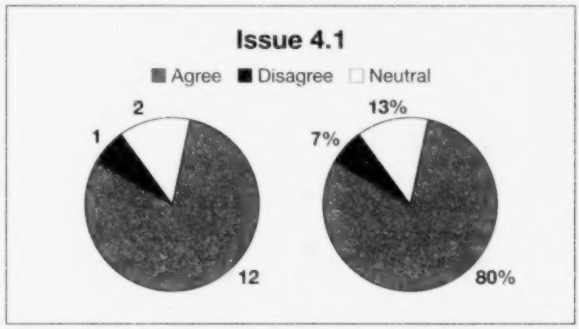
- [Measure] agro-water use.
- [Measure] areas [for] water conservation districts.
- [Track] wetlands versus drainage, and types (permanent versus ephemeral).
- Land use versus site (soils/aquifers).
- [Measure] policy compliance and number of EA's [environmental assessments] - sustainable development commissioner.
- [Use] water use impacts as triggers for EA's [environmental assessments].
- [Track] number of communities with water conservation by-laws and other indices of sustainable policies.
- [Track] town plans and practices reflecting range of sustainability measures.
- [Track] increased number of low volume toilets/showerheads.
- Legislation for US toilets (low flush).
- Water meters for households.
- Consumption could be expanded to include recreation. For example, Swan Lake and Rock Lake, if empty, are not recorded by the indicator.
- Need a measure of water quantity, in various categories: how much in aquifers, etc. How much is utilized.
- Water consumption a good indicator. But, so what if we know, what will we do with this indicator?
- How will wells be monitored? Consumption from wells currently not included in monitoring.
- Regulating wells as an indicator.
- [Measure] agricultural water consumption.

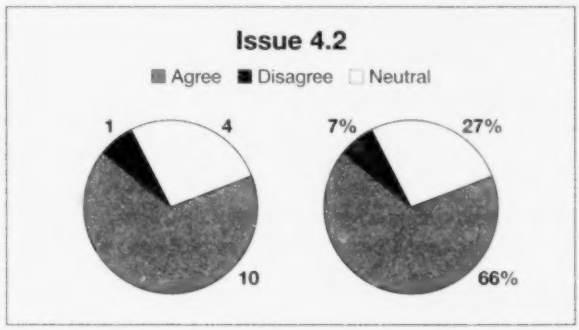
Staff workshop notes on public comments and questions not reflected in participants' notes:

- Water quality: agricultural runoff.
- High use of domestic lawn chemicals. Guidelines/objective need to be more stringent.
- Water consumption meaningless as an isolated piece of information. Need good data on a base water quantity – what is there versus the rate of consumption for this to be useful.
- Need to promote water conservation.

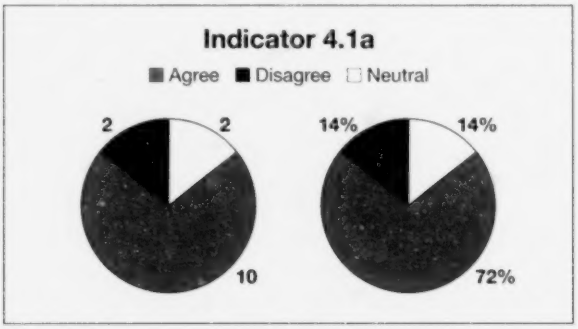
Questionnaire Responses:

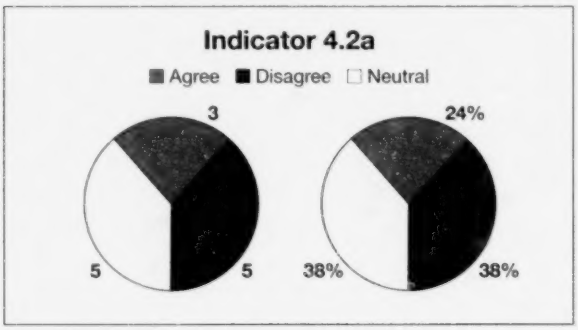
Do you agree that the issues presented in the water category are the key areas to track to help determine sustainability in Manitoba?





Given the indicator selection criteria, do the proposed indicators sufficiently address the issues?





Are there alternative indicators that would better represent the issue, if so, which ones could be replaced and why?

- Factory farm consumption and waste monitoring.
- Municipal Water Treatment Centre could be used to determine water consumption.
- The assumption is that WQI is adequate. I don't think it is for phosphorous.
- 4.1(a) [Manitoba Water Quality Index]: Why not assemble numbers from Manitoba Health on water borne disease incidence?
- Perhaps figures on the number of low water use toilets versus regular toilets?
- You have to document existing water in the form of wetlands.
- Ok, but need to include state of aquifer where many wells or even one for an urban area are used.
- Private wells should be sampled in same way.
- How to compare areas with different mineralogy/water quality – have to normalize to a standard.
- Data on aquifers is inadequate. More study is needed.
  - Another issue is privatization of water e.g. Cartier. Indicator – number of private public partnerships.
  - Another is the subsidization of water services to urban sprawl.

Do you have other comments on the water category?

- Cost of water in rural areas is high due to poor water quality or low availability which limits the growth of the livestock, and value added food industry.
- Very important to manage agri-business consumption of water. We do not want to be like Walkerton Ontario.
- 4.1 (a) [Manitoba Water Quality Index]: Rural communities should be empowered to test their own water supply.
- 4.2 (a) [Water consumption] Devil's Lake consideration: How do you account for that?
- Energy from damming rivers affects water quality. Gillam?
- Wells in our rural areas can be tracked for consumption or not. A required testing every year should be done, i.e. is water consumable for humans and animals? Where are the well water sources coming from, etc?
- Requires careful geographic selection (and publication) of sampling points. No aggregates!
- We have to go farther in measuring the effort to conserve, e.g. industries recycling, home reduction, changes in irrigation technology. It occurs to me, in this context and likely in many others, that Statistics Canada may have data which could be mined from their Census material.
- According to Manitoba's own stats there are 50,000 unmonitored wells. Therefore, there are approximately: 1) 50,000 wells where quality is measured on an as needed basis, 2) 50,000 unmetered users.
- The data is incomplete on a best guess.
- No mention of water in context of power, i.e. the less hydro we use domestically the less demands for change of our waterways. Should foster more use of forests for heating, etc.
- Wetlands have numerous social and biological benefits. They must be tracked and retained before all are drained.

- We need stiffer penalties for water pollution.
- Don't understand how you will analyze effect of environmental and human health interactions in this category?

5.0 Fish

The fish category deals with the health, quantity, distribution and use of fish.

5.1 Issue: Fish conservation and biodiversity

Manitoba's waterways support more than 90 species of fish. Sustaining a healthy fish population means ensuring diversity of species, as well as healthy populations within species. Loss or degradation of fish habitat is a major issue in the conservation of fish populations. Loss of habitat stems from factors such as urbanization, deforestation, flood control, mining and hydroelectric development causing water alteration. Overfishing affects our fish populations as well and is discussed under the issue of fish harvest. Knowing the trends in fish populations is important in developing efficient and effective fishery policies. The final indicator(s) for this issue should give us an overall picture of the health of our fish population.

Public Comments:

- Fish stocking program very good. Exceptional fishing in this area.
- Tri Lakes important to fishery.
- Natural cycles and development is more disruptive to the species.

5.1(a) Indicator: Fish species diversity and population

This indicator would track the number of known species of fish in Manitoba waterways and their relative numbers. It would also include identification of aquatic nuisance species. When new species invade an ecosystem, they compete for food and can alter habitat. The impact of rehabilitative and corrective measures to protect fish habitat and waterway conditions will be discussed in the analysis of this indicator. It will also discuss steps taken to help ensure potential harm to fish populations caused by dams and other man-made structures is minimized.

Public Comments:

- [Track] health of populations.
- [Track] age structure.
- [Track] effort.
- Limited resources for monitoring results in reactive process, need to prevent problems sooner.
- [Track] health of fish and number of species.
- Water quality and habitat important to maintain numbers and various species.
- Fish species diversity and population indicator adequate.
- [Track] fish health - chemicals, toxins in fish.
- [Measure number of] toads/amphibians.

5.2 Issue: Fish harvest

Commercial fishing is important to Manitoba's economy. Fish are also harvested for subsistence purposes and traditional uses. Commercial fishing is based on a quota system that determines the total weight of fish that can be harvested from a lake. Commercial fishing quotas are intended to set the harvest of a fish stock at a level that, when used in conjunction with an appropriate net size, protection of spawning fish and regulated fishing areas, should ensure the long-term sustainability of fish stocks. Manitoba's current approach to setting commercial quotas is based on the concept of Maximum Sustainable Yield (MSY). This approach does not account for year-to-year variation in year class strength, nor does it protect a specific amount of spawning stock. The relationship between effort used to catch fish and the actual catch provides information on the abundance of fish in a particular lake. This information will help to determine whether we are harvesting fish at sustainable levels, within replacement capacity of populations. The final indicator(s) for this issue should give us an overall picture of the long-term survival of fish populations and species.

5.2(a) Indicator: Commercial harvest

The commercial harvest of fish can put pressure on fish stocks. This indicator would provide information on the number and types of fish caught in Manitoba's four largest commercial fisheries: Cedar Lake, Lake Manitoba, Lake Winnipeg and Lake Winnipegosis. It would be related to MSY estimates. Commercial fishing effort would also be examined and linked to harvest. "Effort" is described as the intensity with which fishermen try to catch fish. With more effort, more fish are caught. The result is greater stress on fish stocks.

Public Comments:

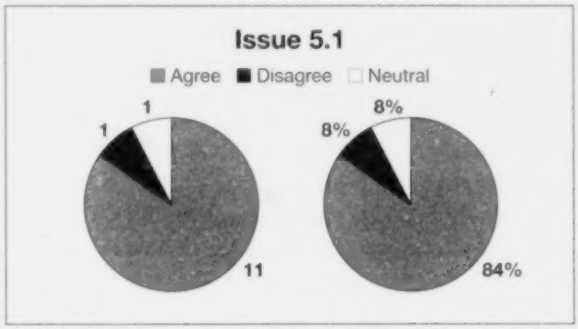
- Too much emphasis on commercial.
- Shouldn't use just commercial harvesting statistics for determining Maximum Sustainable Yield. Include recreational, commercial and domestic/ subsistence (treaty) harvesting.
- Flawed, needs to be polished. Must incorporate residential and domestic catches.
- Recreational fishing should be tracked.
- Take natural cycles into consideration when setting limits for fisherpeople.
- Recreate studies done in the 60's and 70's. Do the study every three years and compare results.
- Regulate commercial fishing – limit to certain lakes.
- Compare wild rice areas to non-wild rice water systems.
- Important that fish are good to eat (i.e., no mercury).
- Commercial [fish] operations impact on other fisheries.
- [Include] recreational fishing.
- What about food sources for the fish, like insect larvae, etc. Organisms in the food chain.
- [Include] sport fishing.
- Lots of data collected already.
- Problem of reporting by commercial harvesters (accuracy).
- [Include] total allowable catch.
- [Include] recreational fishing.

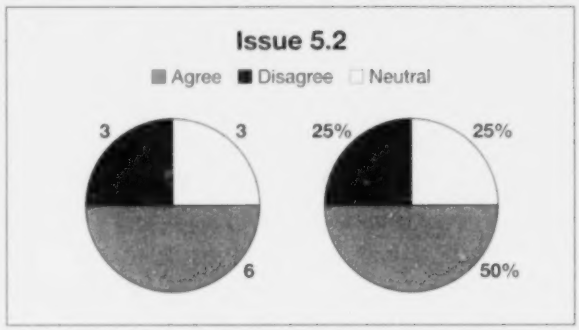
Staff workshop notes on public comments and questions not reflected in participants' notes:

- Use Department of Fisheries and Oceans statistics to track fish health.
- Fish: maximum sustainable yield needs to be replaced by optimum yield. A much better measure.

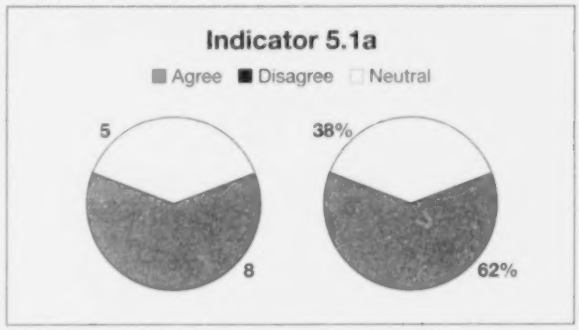
Questionnaire Responses:

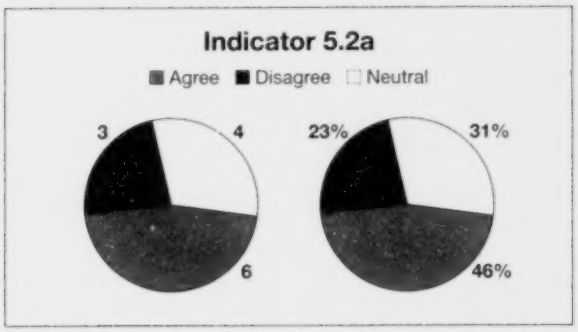
Do you agree that the issues presented in the fish category are the key areas to track to help determine sustainability in Manitoba?





Given the indicator selection criteria, do the proposed indicators sufficiently address the issues?





Are there alternative indicators that would better represent the issue, if so, which ones could be replaced and why?

- 5.2(a) [Commercial harvest]: Fish creel counts be taken into consideration, along with resident and non-resident fishing licenses.
- Don't know enough on this topic to make any decisions.
- Not too concerned about new species but naturally will be monitored in southern water.
- You also have to track the fish prey species populations as they determine the amount of commercial fish stock.
- You should also track recreational fish use as this can be more important on some lakes.
- You forgot pollution from watercraft both exhaust and probably garbage and human waste as well.
- I think water quality and spawning areas is a major concern.
- What about sport fishing that could be depleting key areas and how will this be assessed?

Do you have other comments on the fish category?

- Fish stocking program accounted for.
- Be sure quality data for major lakes collected under 4.0 [water category]. We also need quality data from our lakes, tracked over time.
- How do you measure recreational catch?
- Add "income in kind" to the Human Health and Social Well-being circle (Linkages), and define it in the glossary.
- Of little value without correlation to "catch per unit effort", [question] whether Department of Conservation can supply accurate data.
- There seems to be less fish now than in past.
- Nuisance species important to know about and do something about. What about allowable quota vs. actual catch? Saw you looked at this for forest harvest.
- Agreement on these issues is useless unless proper enforcement by official officers is carried out.
- Our area is in a very volatile situation because of abuse of laws which remove fish during spawning, it is a mess.
- To help solve this problem we need the co-operation of all groups of people to solve the problem but it is a problem to get these groups together to sit together with a open mind to do what's best for nature, as I feel all groups are to blame.
- I doubt we have adequate data, for example in the Whiteshell, to be able to track fish declines by species.

6.0 Forests

The forest category deals with the quality, quantity, distribution and use of forests.

6.1 Issue: Conservation of forest diversity

Forests provide wildlife habitat, moderate temperatures, improve air quality and minimize soil and water erosion. Forests play an important role in global cycles by recycling water, carbon, oxygen and other substances. The harvest of trees provides employment and a variety of wood products to meet human needs. Forests also provide food and medicines, revenue through tourism, education through eco-tourism and places for recreation and spirituality. Maintaining the ecological and genetic diversity of the forest contributes to the health of plants, animals and insects. The proposed indicators in this category are comparable to those used in other Canadian provinces, and based on national forest indicators developed by the Canadian Council of Forest Ministers (CCFM). The final indicator(s) for this issue should give us an overall picture of the health of the forest.

Public Comments:

- Harvesting is important to maintain diversity.

6.1(a) Indicator: Forest type and age class

Natural and human-caused disturbances such as fire, insects, disease and logging, play a role in how forests age and the species of trees that regenerate. The more frequent the disturbance, the more likely the forest will have trees of the same age. Age class distribution is an important indicator of forest diversity. Planning to maintain a diversity of age classes can contribute to a full range of ecosystem types and wildlife habitats. Information on age class would be provided by ecozone, and type of forest - coniferous, deciduous, or mixed. This information would be compared to historical information and to the total forested area of the province.

Public Comments:

- [Measure]forest ecosystems (not just commercially viable forests).
- [Measure] primary forest versus secondary forest and relationships/patterns between them.
- [Measure] specific forest indicator species – animals, birds, plants, insects, microbes. Not just for commercial forests, but for bogs and fens as well.
- Ecological health and multiple values.
- [This indicator is] important. Must continue/ enhance monitoring of new growth/old growth.
- Need to be diligent and proactive.
- Hard to quantify the type and age class.
- Need to report more frequently.
- Allowable cut too easily flexed.
- Compare to historical data.
- [Measure] natural and human caused disturbances such as fire, insects, disease and logging.
- Forest fires are good for biodiversity.
- Re inventory: should know undergrowth species as well.
- Need more knowledge of growth of different tree [species] in different forest types – conditions.
- Need for educators – train people to be able to identify [species detail and collect data].
- Health of forests based on stressors such as insects, fire, etc.

6.2 Issue: Forest harvest

To ensure availability for future generations, forests must be harvested sustainably. This means the maintenance and enhancement of forest ecosystem function and services, as well as condition and productivity. Forests play an important role in the province's economy and contribute to the health of our environment and society. For some, cultural and spiritual well-being depends on the forest. All of these uses, and the effects of natural disturbances such as fire, insects and disease, and growth rates, must be balanced in forest planning. Monitoring current harvest practices and forest regeneration will help to ensure forests continue to support many uses. The final indicator(s) for this issue should give us an overall picture of whether current levels of harvesting ensures all forest uses and values will be possible and intact for future generations.

Public Comments:

- Track reforestation program.
- 10 to 15 million trees planted in Manitoba each year.
- Forest harvesting is measured sustainably.
- Softwoods are replanted.
- Hardwoods not necessary to replant (grow from root).
- Selective forestry versus clearcutting [track type of harvesting method being used].
- Increase in sedimentation in rivers around clear cut areas [as an impact of this tree harvest method].
- [Track] use of forests other than just logging.

6.2(a) Indicator: Annual allowable cut versus actual harvest

The Annual Allowable Cut (AAC) is determined by sustained yield. The volume of trees harvested cannot exceed the total volume of trees expected to grow in one year. AAC is the primary tool for determining wood allocation for large industries and individual forest operators. Calculations for AAC factor in other forest uses such as recreation areas and ecological reserves. This indicator would track the volume of trees harvested and compare it against the AAC.

Public Comments:

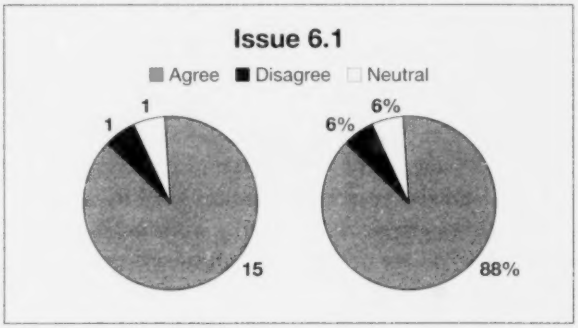
- [Track] prior to AAC regeneration movement of forest.
- [Natural] regeneration rate, not based on regeneration of plantations.
- Track deforestation pattern with historic benchmarking.
- Will new growth/regeneration replace old growth forests or will we deplete too much?
- Need more quantifiers. AAC – base on amount of time for maturity rather than growth/year. Base on harvestable areas. More understandable.
- Monitor flooding around clear-cut areas.
- Allowable cut divided by management units. Allowable cut determined by total volume of trees expected to grow in one year. Summary: AAC is questionable and should be re-examined.
- Intent of the indicator is to live off the interest.
- Good indicator.
- [Track] alternative uses (of forests): berry picking, maple sugar, tourism.

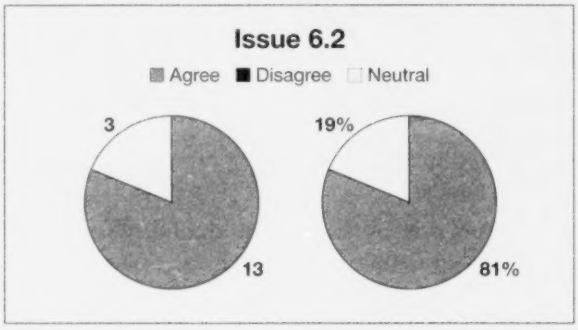
Staff workshop notes on public comments and questions not reflected by participants' notes:

- Forest annual allowable cut not based on sustained yield. Should be subsequent to bringing all values to bear. Requirements for wildlife, etc., versus just timber yield. Same should apply to any resource.

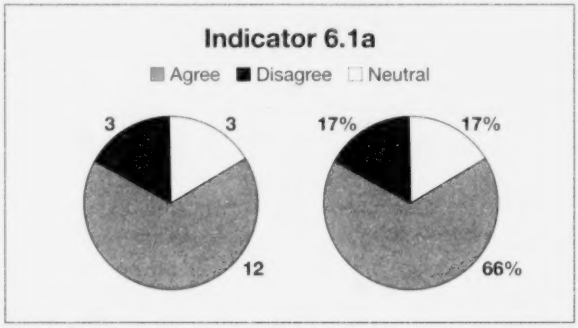
Questionnaire Responses:

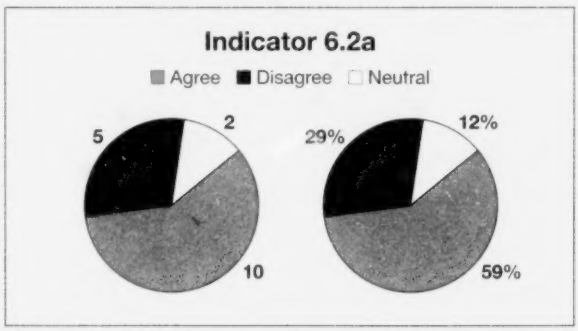
Do you agree that the issues presented in the forests category are the key areas to track to help determine sustainability in Manitoba?





Given the indicator selection criteria, do the proposed indicators sufficiently address the issues?





Are there alternative indicators that would better represent the issue, if so, which ones could be replaced and why?

- The statements on data availability suggest new data is being collected every five years. This is not the case. Also, it indicated the lack of appropriate, much less current data to determine type and age class. There are also more appropriate ways to measure sustainability. AAC versus harvest only compares actual with permitted. The primary issue is the permitted level of harvest and how it is determined.
- Reforestation indicator important to include.
- We need at least two other indicators – measures of replacement and success, in both planting and natural regeneration - measures of forest advance and retreat under influence of climate change.
- [Track] percentage of recycled paper going into pulp mills.
- You need to also identify the understory plant species for each forest ecozone.
- The annual allowable cut by forest type and age class is a better indicator, as old growth should be protected.
- The proposed indicators are already well developed. However, there is need to constantly update and improve the quality of the data to insure the indicators reflect the changing forest and the changing needs of society.
- Total areas do not flag loss of an important ecozone vegetation.
- Nothing said about reforestation – should account for reforestation and natural regeneration.
- Other forest values need to be monitored – not just harvesting trees.

Do you have other comments on the forests category?

- Size of areas, in relation to age classes is important, as some species need larger areas to survive. LP [Louisiana Pacific] harvest was based on agricultural Crown lands as well as forest reserves, so AAC may not be a good indicator of anything except politics.
- The AAC is not recalculated on an annual basis. In addition the current calculations do not even reflect long term sustainability.
- Public policy implications on second generation forests put in place. Strengthen reforestation policy: involve forest companies more.
- Does this include death of trees by natural causes?
- I think the province should be pro-active in adding new forest on marginal agricultural lands – increasing the carbon sink, sustaining diversity, aiding in connectivity between protected areas. A simple annual measure would be easy to collect.
- Add "income in kind" to the Human Health and Social Well-being circle (Linkages), and define it in the glossary.
- Some clarification [needed] on AAC before use as an indicator.
- Add fire-wood to Human Health and Social Well Being (Linkage).
- I think the forests of Manitoba have been and are currently well managed. However, it is important to ensure that there is sufficient funding and well trained professional foresters and forest technicians on staff to deliver the programs to ensure the sustainability of the forest resource for all users. Such financial and human resources in the department have not always existed.

7.0 Minerals

The minerals category deals with the quantity and use of mineral deposits, and mining activity and its impacts.

7.1 Issue: Mineral inventory and potential for extraction

Manitoba's mineral resources are found where natural processes and conditions have resulted in a greater than normal concentration of a particular substance. Extensive geological records compiled over the past century help to determine if a site looks promising. The high cost of exploration and extracting minerals are important factors to consider before a mine is established. Therefore, tracking information about where mineral deposits are and whether they can be extracted economically is important to know. Mineral reserves are finite and must be managed in a sustainable manner. Reprocessing, recycling, and processing by-products offer new opportunities to conserve minerals, expand

the potential supply and reduce environmental damage. By using more efficient technology and recovery processes, more waste can be recovered.

Public Comments:

- Suggestion that this should not be here.
- The mineral SITE has sustainability issues.

7.1(a) Indicator: Identified reserves versus minerals extracted

This indicator would compare Manitoba's mineral reserves, in tonnes, to the actual amount of minerals extracted. Information would be provided on the type, amount and location of minerals in the province, and the number and area (in hectares) of production leases occupied in each provincial region. The amount and type of minerals recycled or reused would be included in this indicator. Recycling or reusing mineral products helps to conserve energy, reduce environmental damage to air, water and land and reduce pressure on landfill sites.

Public Comments:

- Only goes back to 1990, why not include earlier records? Limited information/time frame.
- Environmental damage from searching for minerals.
- NB [Take note of] amount of recyclables, raw minerals [used] versus recyclables.
- Open pit versus shaft sunk into the ground [method of extraction should be tracked].
- Recycling should be emphasized.
- Gravel valuable for rural economy and infrastructure. Becoming depleted.
- [Track] reserves versus recycling.
- Oil and gas should be included under mineral resources.
- Define "reserves" [using] standards acceptable from professions who employ the word.

7.2 Issue: Mining leachate impacts

Mineral extraction, processing and manufacturing can have an adverse affect on the environment. All metal mines, whether open pit or underground, produce tailings, the finely ground residue that remains after treatment has removed the metal. Some runoff from tailings is acidic and can pollute nearby rivers and lakes. It is important to track how much leachate is being produced from the mining industry and how it is being stored and treated to determine the impact it may have on water. The final indicator(s) for this issue should give us an overall picture of the environmental effects of the mining industry and whether initiatives undertaken have had success in reducing negative environmental effects.

Public Comments:

- If mining tailings controlled mining okay.
- Leachates a big problem.
- Problem of responsibility re: mines closed down.

7.2(a) Indicator: Leachate from mining sites

This indicator would measure the quantity and type of leachate from mining sites in Manitoba and any effects on the environment. Information would also be provided on efforts to reduce environmental impacts of mining. The trend over time should tell us whether co-operative efforts are having a positive effect and whether we are achieving reductions in leachate production. Heavy metals in water are captured in the water quality index (WQI) and will be linked to this indicator.

Public Comments:

- Need to measure how much money/effort is put into rehabilitating (principle of sustainable development) mines that have closed/orphan sites (Sherridan, Lynn Lake).
- How many tonnes of tailings have been cleaned up per year?
- Once a year, publish in a user-friendly manner.
- Reclaiming open pit mines – ensure no pollution.
- Decommissioning of mines [needs to be done] in a sustainable manner.

General workshop comments for minerals category:

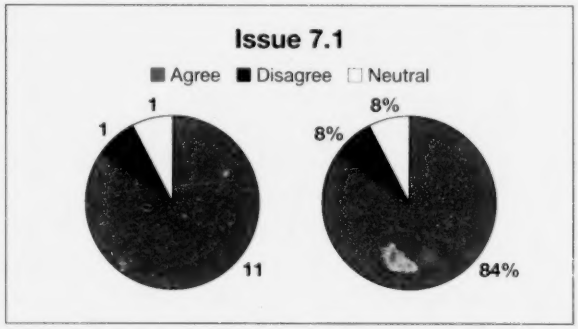
- Sustainable development indicator initiatives underway regarding mining are:
  - Sustainable development policy and indicators being developed by Mining Association of Canada for member companies: reviewed in Canadian context on what sustainable development is about. Feeds into:
  - Global mining initiative: 27 leading mining houses (approximately 85% of global mining) made up of industry, government, NGOs and social groups, chairman expert in area, not from industry.

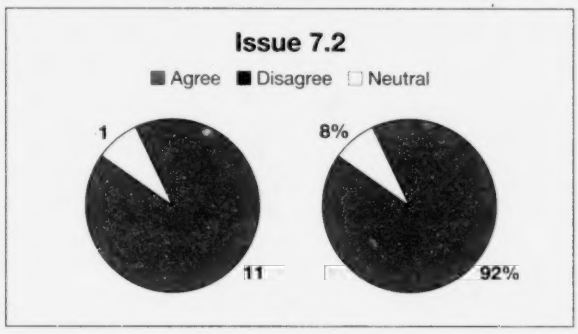
Staff workshop notes on public comments and questions not reflected in participants' notes:

- Track uranium mine tailings.
- Question: Should we look at benefits of mineral extraction? Are we getting enough benefit from natural resources as Canadians? Or a community? Social, economic, environmental benefits, e.g. number of people employed, amount of taxes raised, benefits of companies building arenas, golf courses, etc. Beyond shareholder benefits, what social, economic and other benefits do we get? Answer: Research and development defines how to utilize everything that is being taken out of ground. We produce more ore now because we are more efficient. Now a different context, so can't compare to the past. Benefits for shareholders and corporation taxes for the community. Response: We should track how much and the changes over time. 4,000 people working before, 1,000 now. What does this mean? Economic benefits may cost environment and social dimensions.
- Corporate decisions and information should not become public knowledge. Company secrets. Must be another measure, or inaccurate. If only giving out information that is already licensed, then need to clarify. Is public reporting "known ore", "defined ore" for potential exploration. All classified in this manner. Change wording to "proven reserves". Clarify: economical and non-economical defined differently.
- Need to define reserves. Too general. The Canadian Institute of Mining has a definition.

Questionnaire Responses:

Do you agree that the issues presented in the minerals category are the key areas to track to help determine sustainability in Manitoba?





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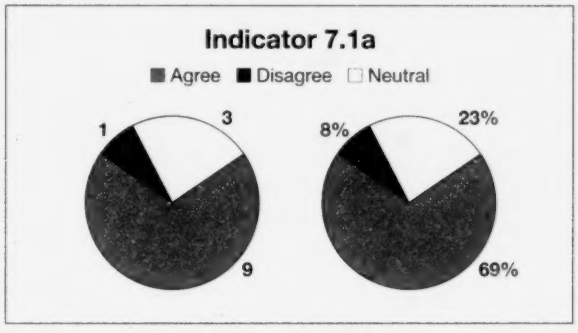
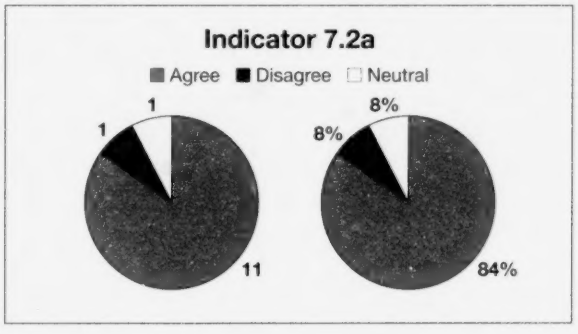




Are there alternative indicators that would better represent the issue, if so, which ones could be replaced and why?

- 7.1(a) [Identified reserves versus minerals extracted]: Indicator should only include tailings that have been or will be refined again. Include exploration and development activities. How does one determine where recycled products contents origins happens. Insufficient! At least collect data on metal recycling effort.
- One measure of conservation is the amount of residual mineral in the tailings – it ought to get lower and lower.
- [Measure] percentage of oil from wells versus amount of recycled oil collected.
- Compare percentage of tailings just sitting there versus percentage of tailings that have been subject to remedial action.
- A better indicator would be amount of alternate energy use versus present energy use. We should track our progress in developing new technology that takes pressure off use of non-renewable resources.
- How do you figure in recycling? How are the data combined in a meaningful way?

Do you have other comments on the minerals category?

- Mining companies somehow be held accountable for cleanup and past operations.
- Use a shorter time frame for results.
- Here, in particular, the concept of "sustainable development" should be explained as it relates to a non-renewable resource.
- Does this mean if enough is recycled of a certain mineral such a mine would not be allowed to operate?
- There is no sustainable extraction of finite resources. The question is how long will they last?

8.0 Soil

The soil category deals with the quality, quantity and productivity of soil.

Public Comments:

- [Call the category] agriculture and soils.

8.1 Issue: Soil quality, quantity and productivity

The productivity of soil depends on its quality and quantity. Erosion controls and changes in cropping, tillage and water management practices have increased the amount of soil cover and reduced erosion. Soil productivity is essential for the continued viability of agriculture. The final indicator(s) for this issue should give us an overall picture of soil quality. The soil category is strongly linked to the agriculture and food category.

Public Comments:

- Too much drainage (uncontrolled) a problem.
- [Need] more stewardship incentives to retain bush, water, sloughs.
- Tax incentive required for good stewardship. Society benefits, society pays.

8.1(a) Indicator: Soil quality

This indicator would be measured through organic carbon levels in the soil. Carbon is the main component of soil organic matter, which is an essential component of soil. Loss of organic matter and thus of soil organic carbon, results in breakdown of soil structure, greater vulnerability to erosion and reduced fertility. This leads to reductions in yield and affects the long-term sustainability of the soil. Change in the levels of soil organic carbon are predicted with a computer model that uses simplified soil-plant-climate interactions to describe the dynamics of soil carbon and nitrogen.

Public Comments:

- [Measure] number of litres of chemical applications per hectare.
- [Measure] percentage acreage in genetically modified crops.
- [Measure] percentage acreage in organic crops.
- [Measure] percentage of corporate farms.
- [Measure] size of adjacent land area in one crop.
- Testing of soil for heavy metals, biological contaminants, radiation levels. All of these should be benchmarked.
- Narrow focus on agricultural soils. What about industrial and commercial impacts?
- Need to have an indicator for soils impacted by industry: fuel contamination, landfill sites, heavy metal contamination, hydrocarbons.
- Carbon [not the] only measure.
- Increased acid content, need for limestone to lower acidity.
- Think organic matter is over-emphasized [because] easiest to measure, but also other factors are important – microorganisms in soil as well as the chemical components.
- [Include] role of other techniques, like zero till.
- Measure quality in relation to Canada Land Inventory Soil Capability Classes for Agriculture.
- Chemical application to soils – licensed, so should be regulated – both agricultural and home use. Sales in the province.
- [Measure] urban soil quality - rate of naturalizing centres in urban areas.

8.1(b) Indicator: Risk of wind and water erosion on cultivated land

Erosion is a natural process that can be affected both positively and negatively by agricultural practices. Although it is possible to measure erosion on a field or small plot of land, it is difficult to measure erosion over large areas. Therefore, the change in erosion risk over time is calculated by considering the effects of changes in land use, cropping systems and tillage practices. This is a proxy measure for soil quantity.

Public Comments:

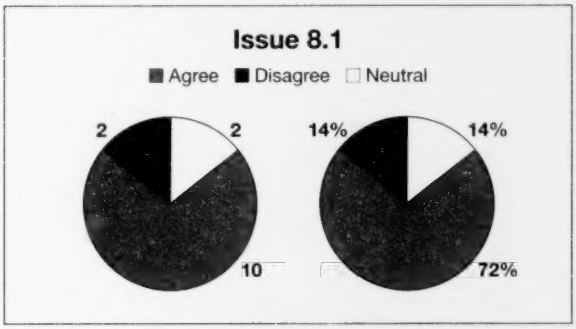
- Decreased levels of soil in our area (Flin Flon). Erosion is a good indicator in agricultural areas.
- Encourage composting.
- Soil erosion due to clear-cuts.
- [Measure] rate of tillage, low or high practices.
- [Measure] changing practices of farmers – alternating crops, summer fallow, shelterbelts.
- Too much erosion, more retention ponds required to limit erosion.

Staff workshop notes on public comments and questions not reflected in participants' notes:

- Pesticides tested on soil for human use: children playing on pesticides, veggies being grown in pesticides. Is soil tested before development of homes for pesticides, PCBs etc.?
- Soil: only measures carbon, need to look at other components, like manure, oil, etc.
- Fuel oil pouring down hill to school grounds. Told "aerating soil" will take pollutants out. Not just food, also other community uses for soil that could be impacted by contaminants.
- Not enough research being done on chemical products in general, i.e. cancer, environmental health concerns. Also effects on jackrabbits and sharp tailed grouse populations, etc.
- Consider other impacts to soil by industry (fuel, pesticides, pentachlorophenols, heavy metals).

Questionnaire Responses:

Do you agree that the issues presented in the soil category are the key areas to track to help determine sustainability in Manitoba?



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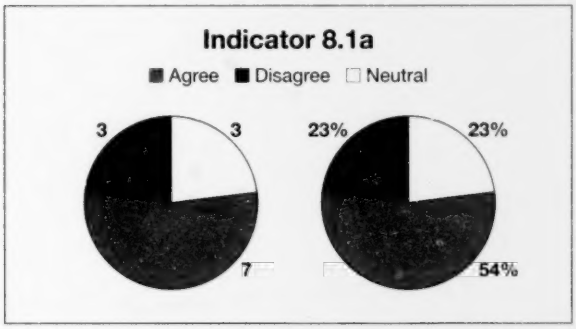
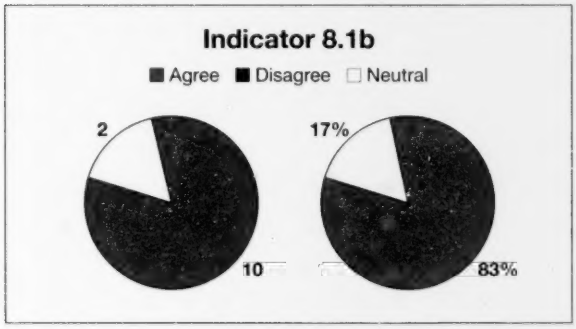




Are there alternative indicators that would better represent the issue, if so, which ones could be replaced and why?

- Soil quality, in addition to organic carbon, salinity, microbiology diversity and amount, soil compaction.
- Soil organic carbon is less useful in the eastern portion of the province with large peat areas – perhaps change in percentage land under cultivation would be a better indicator of agricultural productivity/sustainability of the eastern portion of the Province. Soil quality is not only soil organic carbon – it refers to levels of Phosphorus and other pollutants in excess. What about over-application of manure and Phosphorus accumulation and N leaching to groundwater?
- 8.1(a) [Soil quality]: yield (of crops)?
- More wind breaks? Mandatory?
- [Measure] land availability versus use.
- Some indicator to show increase/decrease of domestic use i.e. gardens in northern Manitoba. Especially as organic gardening is a win-win for sustainable development plus it economically helps families, provides healthy exercise and results in much less pollution.
- Loss of organic matter is not useful in some soil types. You need to measure soil microorganism health as a good indicator.
- For quality the indicator needs to be tilth and fertility and lack of buildup of Phosphorus, pesticides and other contaminants.
- Should use yield trends on representative soil types.
- 8.1(b) [Risk of wind and water erosion in cultivated land] cannot be easily monitored over time.
- Missing is monitoring of salinization or alkalization in irrigated areas.

Do you have other comments on the soil category?

- Needs much more work, as this is the basis of all plant, agriculture, concerns, and is linked to water quality, biodiversity, forestry, and land use.
- 8.1(b) [Risk of wind and water erosion in cultivated land] weigh this indicator against efforts to prevent this from occurring.

- I'm not sure that management practices have "increased the amount of soil cover". They have certainly checked losses, and may have increased the area for and productivity of the resource.
- A tremendous amount of quality agricultural land is being consumed for residential housing.

General Workshop Comments on the Environmental Dimension

- [Need] full carbon accounting: emissions, energy systems, waste systems, forest systems.
- Bottom line: the proposed "indicators" are a good start.
- Must enhance indicators data collection by including traditional knowledge and local knowledge in data collection.
- Communities need to be empowered by this process. They want to be part of the actual decision making re developments (through) co-management boards, conservation planning boards and round tables, not just consultation.
- Need to develop "ecozone/regional plans". How? Through the co-management boards, conservation planning boards and round tables. Every town has a development plan why not a region or ecozone?
- Many of the indicators need to have meaningful standards, values, limits, objectives to reference. (Why develop indicators if there is no "yardstick" to gauge the results with!)
- Indicators need to include goals to require action, i.e. how can we compare developed to undeveloped land when it is all developed (habitat loss); can we recreate studies done in the past to see what really is happening (fish)?
- Enforcement as an indicator for the entire environmental dimension. Problem of this – who will enforce? Self-reporting a problem.
- For all categories need an indicator of quality management.
- Overall guiding statement: need a legislated environmental impact assessment act, with indicators and teeth.

ECONOMIC DIMENSION

9.0 Land Use and Human Settlement

The land use and human settlement category deals with uses of land for human activity and settlement, and the impacts on other uses.

9.1 Issue: Land use and human settlement

Land use decisions in one municipality may not be compatible with those in an adjacent municipality or an affected municipality. Land use is also affected by privatization of Crown lands. Selling these lands to private interests could change current land uses and also have an impact on other uses. Knowing how land is being used and whether current uses are in keeping with provincial policies is important to determine whether we are using our land in a sustainable manner. Integral to land use are the patterns of human settlement on that land, and the resulting pressures on other uses.

Public Comments:

- Is the indicator really reflecting what we want, does Manitoba Conservation have all these statistics?
- No jobs in rural area.
- Bad situation to have two thirds of province in Winnipeg.
- There are more important issues than privatization of Crown lands.
- Tax system bad for rural areas as less people to shoulder the burden.

9.1(a) Indicator: Change in land use

This indicator would track the use of land over time, in hectares. It would provide information on agricultural land and cropland, deciduous forest, water bodies, grassland, rangeland, mixed wood forest, wetlands, bogs, treed rock, coniferous forest, burnt areas, open deciduous, forage crops, cultural features, forest cutovers, bare rock, gravel and sand, roads, rail, trails and built up areas. The number of hectares in production as a percent of arable land would be captured here, as would incentives for bringing marginal land into production. Human settlement patterns, loss of agricultural land for urban development, prevalence of land use planning by municipalities and vitality of rural communities would be examined.

Public Comments:

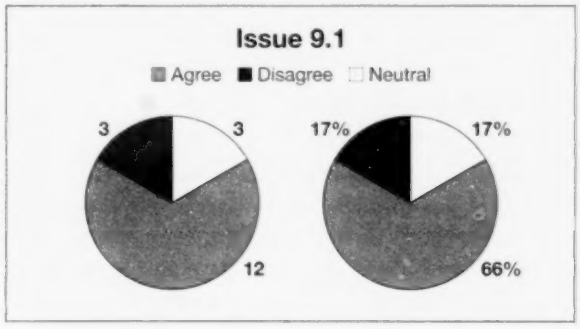
- Provincial land use should be an indicator.
- Treaty/reserve areas in Manitoba should be looked at.
- Provincial land use policies regulations should be an indicator.
- All agricultural land cost, costly infrastructure.
- [Measure] urban sprawl, both city and rural.
- Compliance of new developments and development plans with the provincial land use policies regulation should be an important indicator.
- The regulations should apply to all municipalities, including the City of Winnipeg.
- [Northern region needs] different indicators for focus. [Add] volume of land used for mineral extraction, hydro, forest cutovers.
- Access to land/changes in policies – Treaty Land Entitlement.
- [Measure] land ownership versus land use.
- Fair use/access of land.
- Recycle of land use for other activities.
- Tracking has to be done on a regional basis.
- Global Mining Initiative (work being done with the Mining Association of Canada re: sustainable development mining policy and indicators). Increase the relationship [between the Global Mining Initiative] and the province.
- Mining interest from companies: positives and negatives [for the community where the mining operation would be located].
- Yes, but you need [data] sources of information [for the indicator].
- Not a good indicator, horse has already left the barn.
- Indicator could be number of people in rural areas (for example, the number of people in Pilot Mound).
- Change in land use in some instances, in rural communities, will benefit the economic development of small Manitoba communities. For example, farmland converted into industry.
- Concerns with more balanced data availability. Gather more municipal zoning data (grassroots). This only measures historical trends/impacts.

Staff workshop notes on public comments and questions not reflected in participants' notes:

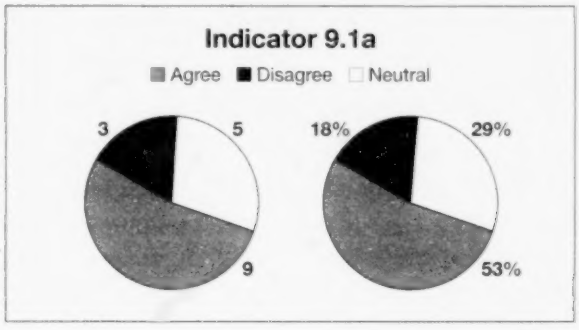
- Productive land should be highlighted: regional and local, display multiple scales.
- Appropriateness of land use, e.g. siting of hog barns [needs to be done based on good information].
- Forest and Crown land – cutovers equal economic activity, mineral extraction equals economic activity and hydro dams equal economic activity.
- How does government decide what areas of sustainable development are most important?

Questionnaire Responses:

Do you agree that the issues presented in the land use and human settlement category are the key areas to track to help determine sustainability in Manitoba?



Given the indicator selection criteria, do the proposed indicators sufficiently address the issues?



Are there alternative indicators that would better represent the issue, if so, which ones could be replaced and why?

- Land use decisions – land or electricity more important? Where do they get the full picture? Are studies made? Is proper assessment done? Are fish more important than dam, or land, or fur harvest? What should be kept and rejuvenated over the long term?
- Population distribution.
- Livestock.
- Because of the diversity of land uses and natural diversity in our province there should be a distinction between northern and southern uses.
- Instead of hectares, track use of land by region. Easier to track.
- Satellite imagery can be used to determine changes in land use. Need more historical data than 1996.
- Rural Development is supposed to track municipal development plans. You need to keep track of compliance to existing provincial land use policies.
- While it is important to track changes in land use, it is vital to determine what extend the provincial land use policies are followed. Indicator - matching every land use plan against the PLUP [provincial land use policies].

Do you have other comments on the land use and human settlement category?

- Losing too much agricultural land to lack of development plans
- Again, what do you assume are the conditions for sustainability under this head? At what point should we be alarmed for the future?
- Will take a long time to show anything.
- Current Crown land use can be poor. Crown land with high values for wildlife or recreational use should not be sold.

10.0 Agriculture and Food

The agriculture and food category deals with the viability of agriculture, management of land for production and processing and safety of food.

Public Comments:

- Why is agriculture by itself compared to all economic sectors?

10.1 Issue: Viability of agriculture

Agriculture has a significant impact on the environment, economy, human health and social well-being. Uncontrollable factors like weather, flooding, low commodity prices, freight transportation costs, high debt load and subsidies paid to farmers in other countries are affecting the viability of many farms. Diversification into other products or services, or adding value to products may help some farmers stay in business and ensure the ability of Manitoba to sustain production of food and food products. Farm bankruptcies affect more than just the family who has lost its farm. Other businesses fail, communities suffer and a way of life disappears. In the long term, the security of our food supply could also be at risk.

Public Comments:

- Viability of agriculture is an issue, but not the viability of other businesses or industry. This area has four indicators. Need to focus on economic activities beyond agriculture.

10.1(a) Indicator: Net farm income

This indicator refers to the income farmers receive after paying their expenses. It would include information on government subsidies to farms, the ratio of debt to capital assets and discussion around community survival.

Public Comments:

- Yes [keep indicator].
- Also include off farm income for data.
- [Include information on the] sustainability of agricultural practices.

- Quality of soil should be tested.
- There will be a need to establish a common method in determining a true net farm income. Using income after taxes is usually hard based on taxation. Need to use an accrue basis versus a cash basis.
- Debt ratio will provide a very strong indicator in regards to this industry.
- Ensure that it is on farm only, or indicate clear portion of off farm.

10.1(b) Indicator: Number, size and type of farms

This indicator would provide information on farm ownership (i.e. sole proprietorship versus partnerships versus multiple owners), including new farmers and corporate farms. It would display the composition of the farming industry in Manitoba. Agriculture issues related to land use pressures would be discussed under the land use category.

Public Comments:

- [Should include] wild rice, non-forest products, mushrooms, berries.
- Yes [keep indicator].
- Larger farms contribute to depopulation of rural communities. Should consider average age of people working in industry. Usually older people are less likely to recapitalize their operation. Technology also plays a part in this.
- [Indicator is] okay.

10.1(c) Indicator: Farms using sustainable agricultural practices

Sustainable agricultural practices refers to practices such as growing forage crops in rotations or as permanent cover, growing winter cover crops, planting shelterbelts, strip cropping, using buffer strips, using conservation (or zero) tillage techniques, contour cultivation and organic farming. This indicator would provide information on the total acreage farmed using these practices and the type of practices being used. An appropriate mix of land management practices tailored to the conditions and needs of individual farms can provide multiple benefits for preserving soil health and productivity, minimizing water contamination, conserving wildlife habitat and maintaining nutrients. The social acceptability of agricultural practices is sometimes an issue. For example, stubble burning and livestock odours tend to raise complaints in communities. This would be discussed in the analysis of this indicator. Note: Through the public participation process, we must obtain a consensus that the practices we are putting forward here are considered "sustainable practices" by Manitobans.

Public Comments:

- Problem with organic farming. May be a marketing ploy. Organic farming should be left, but moved to be under number, size and types of farms.
- There are no indicators.
- [Track] non-renewable fuel sources [used for agricultural machinery].
- Water contamination important as well as soil contamination.
- May be hard to narrow down if these methods will cause damage to an economy. Social acceptability is important with farming issues. Farmer needs to seek out viability options based on social pressures.
- Add a measurement of chemical use.
- Add a measurement of bankruptcies.
- Too complex.

10.2 Issue: Safety and quality of food

The safety and quality of food is crucial to human health and the viability of farming. Safety and quality are important at each stage of production, from raw materials to end product. Regulations help to ensure the safety of products. It is important to track the actions producers are taking to ensure safety of food products and whether these efforts are paying off when these products are inspected. The safety and quality of food could also be impacted by genetic alteration. Bio-engineering is currently a controversial issue, however, there are no established indicators to measure the effect of genetically modifying food products. The final indicator(s) for this issue should give us an overall picture of food safety and quality.

Public Comments:

- [Ensure] standardization of basic foods costs (you do it with beer and alcohol).
- Too much pesticide being used.
- You don't know until it's too late.
- Canada is a leader in life expectancy.
- Agricultural sector not bad compared to the city pesticide levels, ten times below Winnipeg than upstream.
- Organic food has more bacteria and can be dangerous.

10.2(a) Indicator: Food meeting quality standards

This indicator would track food products, providing information on the percentage of total that meets quality standards. This information would be provided by commodity. The analysis of this indicator would be limited by the lack of information on impacts related to pesticide and herbicide use and genetic modifications of food.

Public Comments:

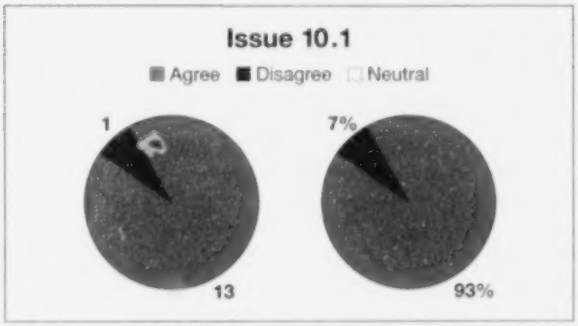
- Replace [measures for] safety and quality with [measure of] price [of food].
- Too complex.
- Data that is science based must be added to measure this indicator (independent and unbiased).
- How many foods are being inspected and are showing up, E. coli bacterium, etc.
- Clarify the need of imported food to meet standards.
- [Measure] how many [food] samples are to be in non-compliance.
- [Food must be] monitored and regulated for genetically modified foods.
- Identity preserved and HACCP [Hazard Analysis Critical Control Point] system.
- Poor indicator based on the quality deteriorating after at leaving the farm. What happened with the product due to manufacturing?
- Negative statement in this indicator is made in regards to use of pesticides and herbicides. There is a need to monitor the process from start to finish.
- We feel that the information is available on genetic modification and pesticide use.
- We assume that the defined standards are sufficient and appropriate.

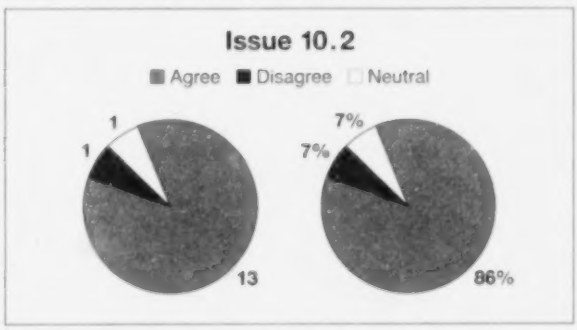
Staff workshop notes on public comments and questions not reflected by participants' notes:

- Important to keep small farms.

Questionnaire Responses:

Do you agree that the issues presented in the agriculture and food category are the key areas to track to help determine sustainability in Manitoba?





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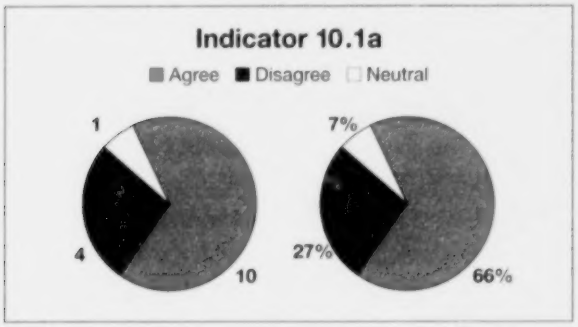
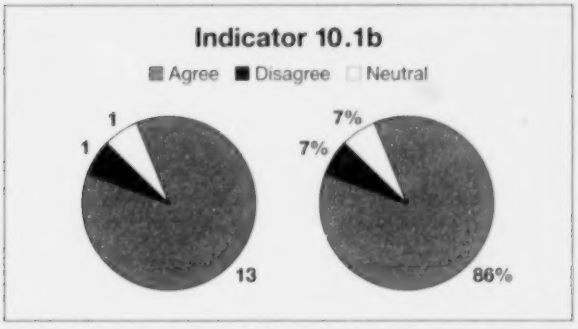
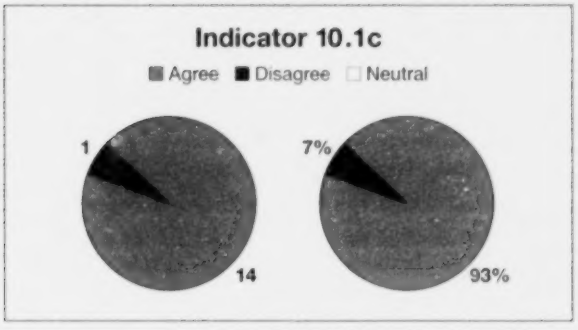
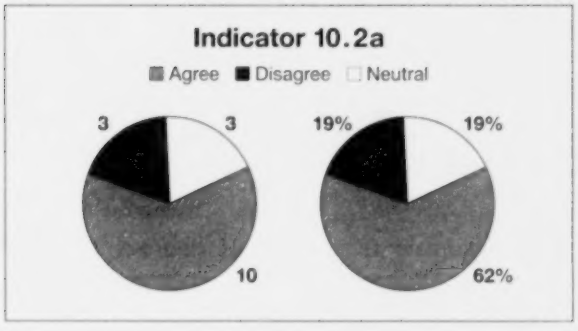








Are there alternative indicators that would better represent the issue, if so, which ones could be replaced and why?

- Level of value-added processing of agricultural products in Manitoba is important as well. Crop yields need to be tracked to see if production is falling due to soil quality deterioration or climatic change.
- Damage from factory farms on local environment. Waste emissions.
- Lose 10.1(a) [Net farm income]: misleading.
- 10.1 etc.[Viability of agriculture and associated indicators] – Given the times, you need some production figures, e.g. trends in number of pigs produced in barns compared with other approaches. Same with cattle – and some speculation on what sustainable development is under these circumstances.
- I think there is some data from the Feds on food not meeting standards.
- Tracking gardening trends both commercial and domestic might also be good.
- You should also keep track of the number of people that know how to farm.
- Also keep track of processed versus unprocessed food use.
- A test to see if this indicator 10.1(b) [Number, size and types of farms] works is to see if the trend from grain farming to livestock after the Crowe shows up.
- No indicator yet for 10.1(c) [Farms using sustainable agricultural practices] for GMO [genetically modified organisms].
- 10.2(a)[Food meeting quality standards]: Not a suitable indicator - food products change with time and constantly need to be revised.

Do you have other comments on the agriculture and food category?

- Linkage of agriculture to non-renewable fossil fuel products should be tracked, for fuels, and for production input like fertilizer. Genetic base of crops important, in terms of preserving gene pool, to develop new crops, animals which can cope with climatic variability.
- Factory farms should only be located in industrial zoned areas, not rural agri-areas. They are not farms!

- Difficult to track.
- Need more health inspectors, too much red tape to find final solutions to problems.
- How are we to reach consensus on sustainable farm practices? Should organic production, hog-barns etc. be included?
- Add "income in kind" to the Human Health and Social Well-being circle (Linkages), and define it in the glossary.
- 10.2(a) [Food meeting quality standards]: If trend showed an increase in domestic organic gardening, would indicate safety and quality and result in less landfill from packaging, etc.
- Gardening could be mentioned in the Human Health and Social Well-being (Linkage).
- In Europe, they are experiencing a shortage of farmers that know how to care for livestock and plant crops.
- 10.1(c) [Farms using sustainable agricultural practices]: Seems you are not sure of this when one reads last sentence – not sure what this means and would have a great concern if those who are not in the know are to determine what is sustainable.
- 10.2(a) [Food meeting quality standards]: I think you say it in the last statement under data availability.
- G.M.O. [genetically modified organisms] issue is totally one-sided against the technology by the media.
- G.M.O. [genetically modified organisms] are good for the environment, ensures large volume of the growing crop and maximizes the resources used to grow this crop. Also provides the best weed control ever developed.
- 10 years ago no one produced [genetically modified food].
- Farmers should plan for both bad years and good years.
- It is right not to get into scares about GM foods.

11.0 Energy

The energy category deals with current and potential sources of energy, including fossil fuels, hydro, solar, geothermal and wind, and their use.

11.1 Issue: Energy efficiency and conservation

Sustainable development requires being efficient and thoughtful about how we use energy, and taking responsibility for any adverse impacts. Production processes have improved and now use less energy. Therefore, it is possible to increase production without increasing energy use. Similarly, building codes have changed, resulting in newer buildings that are more energy efficient than older ones. Conserving energy is important to ensure that supplies will be available, at reasonable cost, to meet future needs. Non-renewable fossil fuels such as oil, natural gas and coal are a major contributor to greenhouse gases that cause global warming and climate changes. Because our own supplies are limited, most of the fossil fuels used in Manitoba are imported from oil rich jurisdictions. Fossil fuels are finite and costs to develop and use new sources are high, both economically and environmentally. Reducing our dependence on out-of-province sources of fossil fuel energy would reduce greenhouse gas emissions. The final indicator(s) for this issue should give us an overall picture of our efforts to use energy more wisely.

Public Comments:

- [Should be] equitable energy costs between urban and rural areas.
- Continue to do research and development [funded by government] to improve energy types or forms of energy.
- [Should be] equal access to all at the same cost.
- Drop the price of hydro instead of bringing in more natural gas (non-renewable) and exporting hydro (renewable).
- It is appropriate that emphasis is on efficiency.

11.1(a) Indicator: Energy efficiency

This indicator would be expressed as a ratio of energy consumption per dollar of real GDP, as well as per capita. This allows for comparison of our energy consumption to other jurisdictions, as well as with the relative increase or decrease in production of goods and services. Thus, if there is an increase in goods and services production levels and/or population, but energy consumption is down, meaning fewer emissions and waste, we are using our energy more efficiently. This indicator would include information on utility incentive programs and targets for consumption and emissions reductions, as well as energy efficiency in government buildings.

Public Comments:

- [Measure] number of dams, total power generated.
- Broad base.
- Yes [keep indicator].
- Maybe add a greenhouse gas indicator on labels.
- Energy efficiency may not be a good indicator. GDP can be affected by a lot of outside influences. Price of every commodity changes, thus creating a difference in their effect.
- Need a net cost indicator, as [cost] is the prime motivator of energy and conservation and employment generation.

11.1(b) Indicator: Ratio of renewable energy consumption to total energy consumption

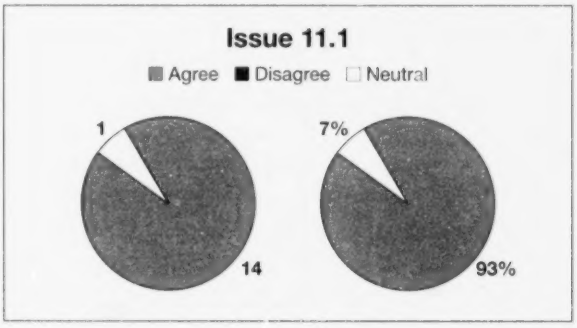
Renewable energy sources include hydroelectricity, solar photovoltaic cells, wind, geothermal and biomass. Renewable energies emit few, if any, pollutants and do not deplete finite resources. Tracking the changing ratio between renewable and non-renewable energy consumption would tell us whether or not we are moving to more sustainable energy sources. Any regional differences would be discussed in the analysis if possible.

Public Comments:

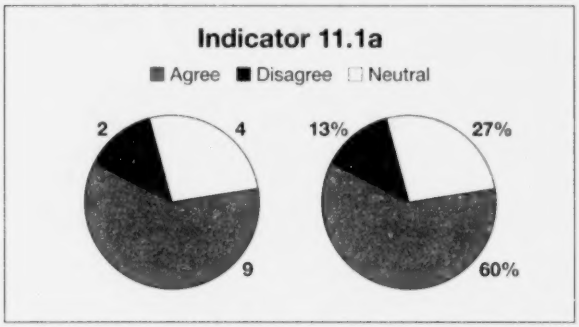
- Less reliance on fossil fuels a key indicator.
- No such thing as sustainable use of non-renewable resources.
- The document has limited vision for long-term energy concerns (i.e. long-term 20-50 year vision).
- Have to add wave energy.
- Yes [keep indicator].
- Possibly track the number of buildings meeting a certain standard.
- Cost of renewable and non-renewable energy sources should be looked at.
- Fuel tax should go to where it was meant.
- [Measure] research and development into new renewable sources of energy, i.e. ethanol, electric cars, low mileage engines.
- Ratio is fine but other alternatives are not being addressed. The future is kind of unknown, e.g. hydrogen.
- Need some indication of research and development expenditures on alternative energy sources versus consumption on an annual percentage basis.

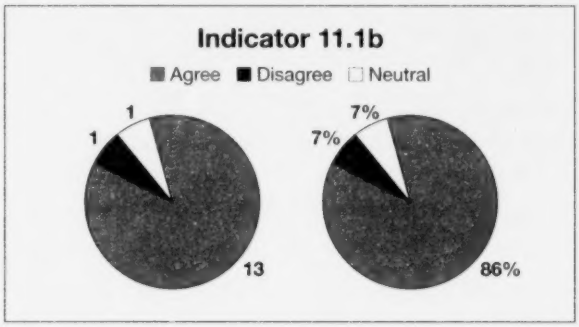
Questionnaire Responses:

Do you agree that the issues presented in the energy category are the key areas to track to help determine sustainability in Manitoba?



Given the indicator selection criteria, do the proposed indicators sufficiently address the issues?





Are there alternative indicators that would better represent the issue, if so, which ones could be replaced and why?

- Separate the hydroelectric from other renewables so there will be some 'definition' in the non hydro renewables values
- Include new energy development indicator
- If it were so, then lower income families of $50,000 and less should have easier help to upgrade and maintain suggested choices.
- Try energy to obtain gasoline over energy in gasoline, and start – exploration, well, refinery, transportation, etc.
- 11.1 (a) [Efficiency indicator]: The R2000 program and hydro home inspection program have likely resulted in energy savings, but how much. If we had an indicator of Kwh per 1000 square feet of residential and commercial buildings tracked over the years we would know.
- As non-renewable energy reserves deplete, an increase in conservation should occur and be tracked.
- Reduced automobile use is vital to energy conservation – gas consumption per capita should be an indicator.

Do you have other comments on the energy category?

- Human power should be enumerated in your list of renewable energy sources in 11.1(b) [ratio of renewable energy consumption to total energy consumption]. That way, a shift from car use to bicycle use will be reflected here.
- I hope the 'issue statement' presented at the opening of this section is not presented as 'fact'. As a P. Eng. with 20 years of energy, energy management and energy conservation experience I would not agree with most of the statement. Especially in terms of the 'view' of industrial energy use and in terms of the out-of-province attitude which just may be the reason Saskatchewan is burning coal rather than using Manitoba [hydro] electricity.
- Affluence is a factor on individual/family consumption numbers. People have a tendency to have more toys and household amenities when they can afford it. This may be one of those indicators that have to be linked to others in order to reflect accurate figures.
- Include life-cycle costing in commercial and residential building analysis (or at least government).
- This is not happening. Those in this income bracket do not have funds to follow the energy efficiency and conservation. The more people living in this category, the higher the poor energy efficiency and conservation done.
- 11.1(b) [ratio of renewable energy consumption to total energy consumption]: Excellent!
- We need much more attention to full cost accounting. In the energy field, we are "getting more sustainable" if energy to produce and operate energy in the product is as small as possible.
- People and industry need government incentives to use renewable energy sources or it won't happen.
- 11.1(b) [ratio of renewable energy consumption to total energy consumption]: Should already be using more renewable energy, this [is an] important area.

12.0 Consumption

The consumption category deals with the demand for and use of goods and services and the waste products resulting from their use.

12.1 Issue: Rate of consumption

Consumption, or the purchase of goods and services, increases economic activity and is associated with an increase in standard of living. However, waste generation is associated with high levels of consumption and resource depletion, and producing waste is not sustainable, nor is it economically efficient. Unsustainable consumption of resources may compromise the ability of future generations to meet their needs. The final indicator(s) for this issue should give us an overall picture of consumption habits in Manitoba.

Public Comments:

- Needs clarification.
- Question the validity of a consumption rate of services, how to measure. Stick to goods.
- Consumer decisions – sustainability – sustainable consumption/production.
- Consumption [category should be tracking] extended producer responsibility, number of environmentally friendly products and their [level of] consumption.

12.1(a) Indicator: Ecological Footprint

The Ecological Footprint (EF) is an analysis of how much productive land it takes to support the levels of consumption in a defined area. Inherent are the ideas of carrying capacity and "importing sustainability" for a community by depleting the finite natural resources of another region. The EF index operates under a number of assumptions and mathematical equations that may or may not be accurate. In addition, the EF does not take into consideration the social impacts, benefits or detriments of the consumption levels on the population being studied, or the population who is supplying the goods and services the studied population is consuming.

Public Comments:

- Data is not possible to measure.
- Define "adequate" throughout [the document].
- Very complex.
- Define "productive land".
- Question about the definition of Ecological Footprint.
- Yes, (keep indicator) as long as it can be fleshed out.
- Ecological Footprint is not a good indicator because the EF is not easily understood nor is it easy to measure. Not readily available or accepted.

12.1(b) Indicator: Waste disposal per capita

This indicator would track the amount of waste (in tonnes) per capita going to landfills. In 1989, environment ministers from all Canadian provinces and territories made a commitment to reduce waste going to landfills by 50 percent by the year 2000. Programs under the Waste Reduction and Prevention (WRAP) Strategy include tires, beverage containers and used oil. Packaging of consumer goods and how it contributes to the need for recycling and landfills for disposal would also be discussed. This indicator would not reflect problems with finding a market for some of the recyclable goods, and the current level of "stockpiling" of recyclables. This indicator is comparable across Canadian jurisdictions.

Public Comments:

- Use waste to make energy.
- Better use of recycled materials/money to recycle.
- Yes [keep indicator].
- Add the amount of tonnage going to recycling. A ratio between waste disposal and recycling.
- A lot of landfills are not equipped with scales, so acquiring this information would only come from a few of the communities.
- This would not be accurate in a rural setting. Products are disposed in other ways, not just waste facilities and recycling.

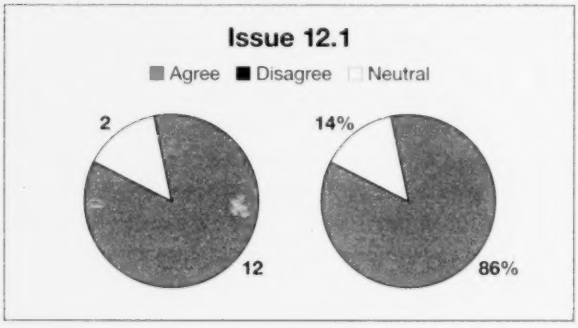
- This is too simplistic and one-dimensional. Need to include measurements of spending per family/capita versus waste generation per family/capita and link this to the local cost of waste disposal fees. Closes the consumption loop.

Staff workshop notes on public comments and questions not reflected in participants' notes:

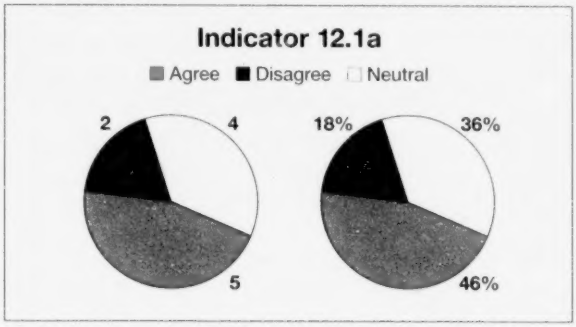
- Just measure goods, i.e. hard data. Garbage in garbage out re waste production, but how to define the garbage in? Skews results.
- Question: If we concentrate on things that are easy to measure, we could be measuring the wrong things. Services important to make communities work. Answer: just separate the information on goods from the information on services, because services don't generate waste and goods do. Need to define and separate.
- Recycling needs to be an indicator.
- Measure changes in consumer preferences or lowering rates of consumption versus ecological footprint.

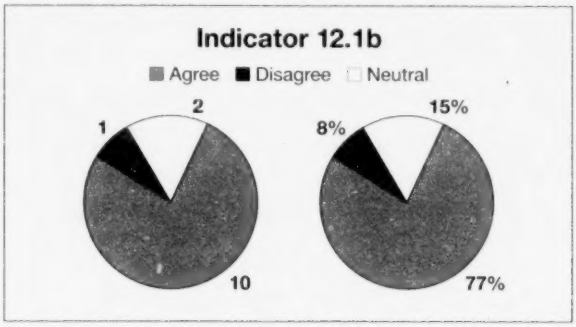
Questionnaire Responses:

Do you agree that the issues presented in the consumption category are the key areas to track to help determine sustainability in Manitoba?



Given the indicator selection criteria, do the proposed indicators sufficiently address the issues?





Are there alternative indicators that would better represent the issue, if so, which ones could be replaced and why?

- Measuring waste disposal per capita, although useful in some context, is irrelevant in this context. Industries, like construction, generate significant waste and would influence the per capita number in such a way that it may be irrelevant. I think waste disposal would be more telling if it was broken down by sector, perhaps difficult to do but a better indication of the disposal of waste in our communities. We also need to look at the root of the problem. At the retail end, for example, there remains a huge over packaging of goods. Just walk through the local grocery store and it's easy to see the amount of materials that will one day end up in a landfill (or even if the materials are recyclable we could save the energy used to recycle if we reduced it at source). Over packaging is inefficient from both an economic and environmental perspective. When will we adopt policies similar to some European countries that require the producer of the good to deal with the product at the end of its useful life? This would force the market to deal with the issue, and we can see in Europe that the market

is fully capable of doing so. The province can put all of the money it wants into recycling program, but it's only addressing the effect of a much larger and complex cause.

- Not familiar with 12.1(a) [Ecological Footprint]. Rate of consumption important, but so too is the amount used (too much).
- What good is stockpiling? That is only another form of landfill.
- Please do not concentrate on Winnipeg. There is a whole lot more to Manitoba than Winnipeg!
- 12.1(b) [Waste disposal per capita]: Can also use recycling data from Manitoba Product Stewardship Corporation.
- Waste water generation: public and private.
- EF will have little effect on rural area. Maybe an indicator of what percentage of landfill goes to approved regional facilities would be meaningful and encourage or hurry along the process of operating the hundreds of various small dumps that have no recycling and no supervision. Perhaps 15.1 [Infrastructure availability and condition, under basic services category] will do this although increase in consumption may not always be associated with increase in standard of living.
- Not knowledgeable in this area but should decrease our consumption.
- It is not just the rate of consumption but what is being consumed. Renewable versus non renewable resources.

Do you have other comments on the consumption category?

- The Ecological Footprint does not sufficiently address the issue, but I think it's a good place to start. I think Manitoba should perform an analysis of the data for the EF and then implement a EF study every two years, always taking more thing into [account].
- Your explanation [of the issue] is weak. You have to begin with "need" then move to "want". This calls into question the whole philosophy of sustainable development.
- We do not really know what water is used and therefore we do not know what is returned to the environment. We should know: 1) Quantity of waste water returned to the environment. 2) Quality of waste water returned to the environment. Based only on "news" reports Walkerton, Ontario was a "waste" problem compounded by human error. The blame for the waste was "cattle operations". Human waste can create similar problems as indicated in 1993 in West St. Paul, Manitoba. Needs to address these issues A.S.A.P. because with continued rural residential growth using outdated septic field standard we are creating a problem waiting for the right circumstances to become a crisis. We need: 1. Control over septic field use. 2. Enforcement of standards. 3. Standards review. 4. An abandoned well program.
- People need direction and incentives from government to adopt re-use and recycle habits.
- What happened to the fact that corporations were going to put money into "reduction"? That two cent levy on drinks should have at least been shared.
- 12.1(a) [Ecological Footprint]: Are you or are you not going with EF. These are weasel words.

13.0 Economic Activity

The economic activity category deals with the production of goods and provision of services.

13.1 Issue: Economic performance

This issue highlights productivity and the efficient use of resources for production. Sustainable economic development is essential for the health and well-being of our population and protection of our natural resources for future generations. This issue links strongly to consumption, waste and emissions. The Gross Domestic Product (GDP) should be viewed in the context of equity and market imperfection issues, which are more completely captured in the category on equity and rights. The final indicator(s) for this issue should give us an overall picture of the state of the province's economic activity as a whole, tying in specific information from mining, forestry, agriculture, fishing and energy. They should also tell us whether we are creating and maintaining an environment for cutting edge, sustainable, competitive businesses to flourish.

Public Comments:

- Need a new equation/index - including net job creation, net family income, net employment rate.
- No mention of trade in economic indicators. Indicators qualified by sustainability of products/services.

13.1(a) Indicator: Real GDP per capita growth rate

This indicator factors the inflation rate into the GDP, so that if the GDP goes up it is reflecting a true increase in the province's productivity, and not just the inflation of our dollar. It would be presented per capita, to ensure comparability with other provinces with higher or lower populations. Information would also be presented by industry sector. The GDP is a measure of money exchanging hands, and does not account for services such as volunteer work, caring for children and the value of leisure time, and ignores the depletion of natural resources used to produce goods and services. Thus the GDP is not necessarily a reflection of a society's well-being. The limitations of the GDP would be discussed in the analysis of the data.

Public Comments:

- GDP is okay.
- At what level do you track GDP at regional/ provincial?
- GDP needs to be broader to include all aspects of community.
- Yes, [keep indicator], but [present] by industry sector.
- Should be an indicator that reflects the contributing factor.
- Need other ratios that would measure GDP and take depreciation into mind.
- Would usually be a good short-term indicator.
- Keep GDP.
- [Need] GDP alternative: GDP fails to distinguish between benefits and costs. GPI – Redefining Progress and GPI Atlantic.
- Need for traditional economic indicators to include added dimensions. Presently no linkages.

13.1(b) Indicator: Companies integrating sustainable development

This indicator would track the number of companies using environmental or sustainable development codes of practice, environmental management systems or ISO 14000 in their day-to-day operations, expressed as a percentage of companies that report publicly. Codes of practice and international standards such as ISO 14000 are voluntary initiatives that focus on minimizing adverse effects of operations and products on employees, customers, the public and the environment. This indicator would not reflect businesses who do not publicly report on their processes.

Public Comments:

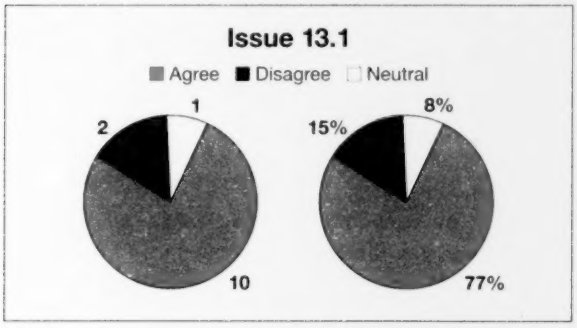
- Value of ISO as an indicator – need to track performance.
- Yes, but is it relevant?
- Measure others' best practice.
- This indicator would not take into account all industry. Limited environment impact by certain industry.
- A measure of company philosophy, not economic performance.

Staff workshop notes on public comments and questions not reflected in participants' notes:

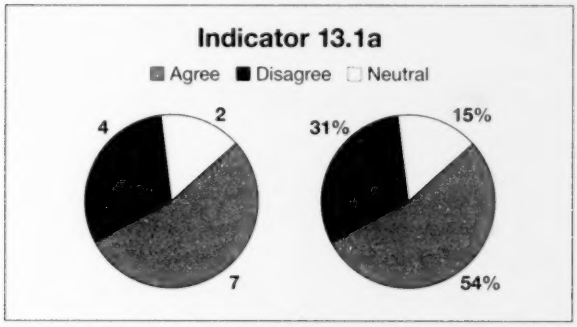
- Blue-collar wages have fallen back, but prices have doubled or tripled. Should track wages, housing and tax base as indicator of economic well-being.
- Track extended producer responsibility.
- GDP is okay, but there is no relation to northern Manitoba. Confusing, put in more simple language.
- Number of educated people is an economic indicator.
- Workforce skills a good economic indicator for a community.
- Statisticians can play games with numbers, e.g. hydro produced in the north equals economic activity but not going into [the north].
- Inter and intra-provincial trade needs to be looked at.

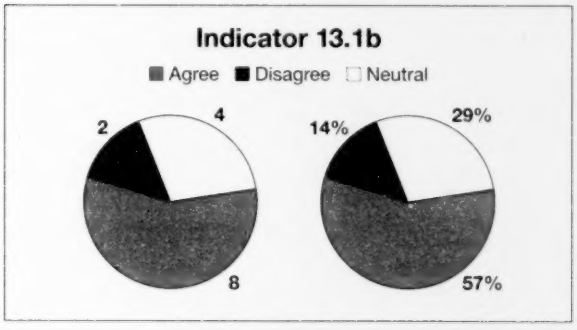
Questionnaire Responses:

Do you agree that the issues presented in the economic activity category are the key areas to track to help determine sustainability in Manitoba?



Given the indicator selection criteria, do the proposed indicators sufficiently address the issues?





Are there alternative indicators that would better represent the issue, if so, which ones could be replaced and why?

- 13.1(b) [Companies integrating sustainable development]: [Include] rate of companies incorporating ISO certification.
- Economic support: water and sewer infrastructure, e-commerce infrastructure, road infrastructure.
- Measure GDP in relation to waste production. The economy relies on the environment. You need a measure of the natural capital available for use.
- Use instead ISEW – index of sustainable economic welfare. Distribution of wealth is another important indicator.

Do you have other comments on the economic activity category?

- Figure must include First Nations people. The province should be split into zones or polling divisions to enable analysis.
- Miss big business who account for 13.1(b) [Companies integrating sustainable development], most of the economic generation? Gini coefficient also used for 13.1 [Economic performance]?
- Need to include volunteer work in the province, e.g. Pan Am, Canada Games, etc.
- This indicator stinks! It is based on conventional economic outlook - growth, consumption, exploitation of scarcity, etc. Read Daly! Look for real costs. Exclude "gains" following catastrophe, etc.
- These two factors measure past performance. We need to also measure future potential including the infrastructure to support economic growth:
  - Water and sewer infrastructure: current capacity, future plans: Water Services Board.
  - Road infrastructure: current quality, planned improvement: Highway Mun. Corps.
  - E-Commerce: current capacity, future improvement: MTS, Private Company.
  - Population support infrastructure: education, leisure, protective services.
- Manitoba, due to rural residential growth, has an over capacity and infrastructure costs that are too high.
- Manitoba has a growth rate average 15 years at 2% (1.5% in capital region). The rate is not sustainable considering our costs/person to support the growth.

- We need to consider making change to reduce cost including a reduction in the case of covering Manitoba. For example: Manitoba has a population of 1,000,000, and 54 politicians, or 18,500 per politician. Winnipeg has a population of 634,000 and 15 politicians, or 42,200 per politician. Rural population of 366,000 has 1000 politicians, or 366 per politician. 200 Mun., 200 CAO, Average salary $45,000 = $9,000,000. 200 Mun, 1000 politicians, average total cost $500/month =$6,000,000. 100 Mun. savings 7,500,000. 50 Mun. savings 11,250,000. This does not even address possible saving due to economies of scale.
- 13(b) [Companies integrating sustainable development]: ISO standards are fluffy, with no teeth. Companies are moving to QS standard.
- Economies must live off the interest and not fully deplete the capital.
- Ok, but what about the businesses who do not report publicly? Does not give total picture then.
- 13.1(b) [Companies integrating sustainable development]: Only follows growth of big business and only some business lines.
- The economy must be seen in a wider perspective.

14.0 Demographics

The demographics category deals with the composition and dynamics of Manitoba's population.

14.1 Issue: Population trends

Manitoba's population is relatively stable. Migration out of the province and low levels of immigration contribute to this stability. In the last two decades, urban migration has resulted in decreasing populations in rural and northern Manitoba and increasing populations in urban centres, especially Winnipeg and its surrounding areas. This is especially true for the province's Aboriginal population, which is one of our fastest growing populations within which rapid urban migration has occurred. Another important factor in our population structure is age. With the exception of the Aboriginal population, our life expectancy is increasing and we are having fewer children. The result is a larger number of elderly who may be more dependent on pension and health care systems and who may impact on our ability to fill jobs. Tracking the structure, dynamics and increase or decrease of Manitoba's population would help to determine the effect of a changing population on particular social, health, economic and environmental conditions. The final indicator(s) for this issue should give us an overall picture of the changes in number, location and composition of the population. Over time, we should be able to link population changes to various trends, such as increased pressure on resources, changes in economic activity, and health of communities.

Public Comments:

- Northern Manitoba has a different population pyramid than the rest of the province.
- Urban transition and migration for the aboriginal population is reflective of lack of housing, socio-economic stability.

14.1(a) Indicator: Population index

This index would include rates of births and deaths, male and female population by age, population increases or decreases by year, rural and urban population ratios and immigration versus emigration. If possible, trends specific to Aboriginal populations will be highlighted. Age composition of Manitoba population would also be examined. This information should give context and help us analyze trends in all other categories.

Public Comments:

- Population trends is very important indicator. Population increases, economy increases.
- Number of educated people is an economic indicator.
- [Measure] workforce skills in the community.
- [Need] faster access to statistics.
- Yes [keep indicator].
- [Measure] type of work: dirty work/clean work.
- [Measure] number of people employed.
- Tracking of indigenous peoples by population because we could have one third to one half of the population not working or paying taxes. Will not be sustainable under present tax structure.
- Yes. [Can] easily obtain records. Accurate on an annual basis.

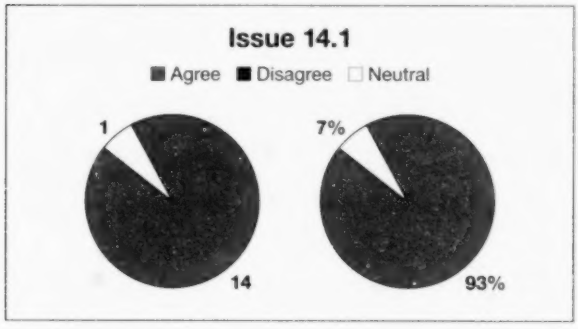
- Population index is good but too broad. Need a breakdown, and very vital to have good analysis.
- Potentially add some measure of rural to urban service purchases.
- [Measure] appropriate population density for a region, based on economic activity and environmental conditions/assets in an area.
- [Measure] spatial distance between place of work and residence, place of residence and basic services.
- [Measure] population movements within communities and/or between Manitoba and other provinces.

Staff workshop notes on public comments and questions not reflected in participants' notes:

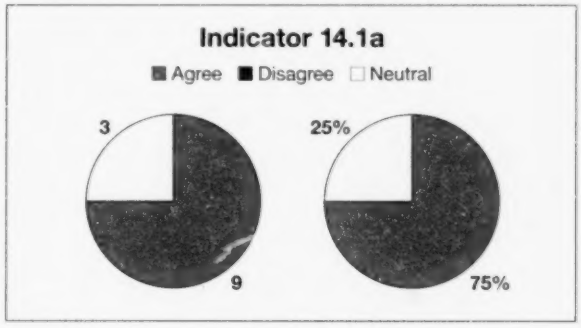
- Ten years ago, population of Norway House was less. People are coming home because the community is developing and the outlook is much brighter. Cranberry Portage is the opposite. One industry town relations.

Questionnaire Responses:

Do you agree that the issues presented in the demographics category are the key areas to track to help determine sustainability in Manitoba?



Given the indicator selection criteria, do the proposed indicators sufficiently address the issues?



Are there alternative indicators that would better represent the issue, if so, which ones could be replaced and why?

- The Tribal Councils and the Manitoba Metis Federation will have more accurate stats in communities. Did Stats Canada collect data on the Reserves last time?
- Labour mobility and population migration (inter-provincially and intra-provincially) important.
- Need to ensure "rural" are truly people farming as opposed to living in the country and working elsewhere.

Do you have other comments on the demographics category?

- Youth migration, brain drain, retention and recruitment of professionals and skilled tradespeople.
- Why are these indicators of sustainability? They certainly need to be known.
- This suggests dividing the document into two parts. What we need to know – how many of who and what – e.g. people, farmers, etc.? What shows us how sustainable development is progressing? In this way you might get around the accusation that, for the most part, you are repeating what every government collects and uses to govern.
- I want to know square miles
- Integrate this with economics. What proportion of the population are wage earners?

15.0 Basic Services

The basic services category deals with the availability and condition of water, waste and transportation infrastructure and services.

15.1 Issue: Infrastructure availability and condition

Infrastructure is a broad term referring to physical structures that form the foundation for development. The type of infrastructure required depends on the type of development. For our purposes, infrastructure refers to water and wastewater treatment facilities, facilities to manage solid waste, transportation infrastructure such as roads and airports, and systems such as mass transit. Clean and safe water supplies and proper sewage treatment allow citizens to have healthy living conditions. A safe, adequate and efficient transportation infrastructure enables economic growth and performance. Therefore, the infrastructure condition and level of service it provides have a great bearing on the production costs and market accessibility. However, the costs of providing water, waste and transportation infrastructure are straining available government financial resources. Funding constraints have resulted in deteriorating infrastructure and repair costs are high. In northern regions, all weather access to isolated communities is limited. As well, some isolated communities do not have access to safe water supplies. Natural gas and telecommunications service delivery to specific regions of the province is also an issue. The final indicator(s) for this issue should give us an overall picture of the state and availability of infrastructure in the province.

Public Comments:

- [Need] proper planning of infrastructure.
- Regional issues: sound management of natural gas, bridges, all weather road or other types, housing, hydro (Tadoule Lake, Brochet, Lac Brochet and Shamattawa).
- Infrastructure dollars are needed.
- Basic services is presently under economic dimension which is appropriate for transportation and telecommunications. Basic services could also be placed under human health and social well-being in regard to provision of potable water and sewage treatment facilities, for example.

15.1(a) Indicator: Population with adequate infrastructure

This measure would provide information on communities with adequate water and wastewater facilities, municipal recycling, regional landfills, hazardous waste facilities and transportation infrastructure. The percentage of the communities that have access to each or all of these types of infrastructure would be presented, with a focus on northern Manitoba.

Public Comments:

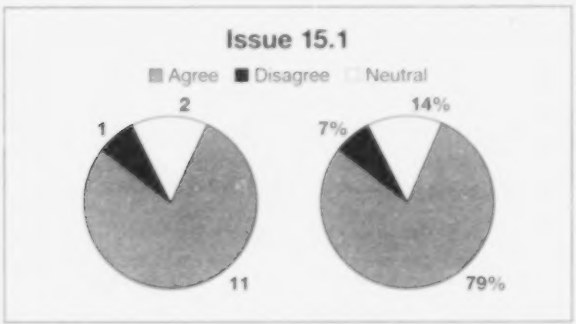
- [Measure] expenditure on infrastructure based on per capita.
- [Need] definition of "adequate" communities.
- [Measure] improvement in the number of adequate [infrastructure for] communities – increased numbers.
- Too broad of an indicator.
- Yes, good indicator
- Should add an indicator of telecommunications service delivery that can be measured, services available.
- Measure water management.
- Non-government sources should be contacted for information on infrastructure.
- Hydro availability should be added, type three phone, etc.
- Indicator that measures the number of homes that are free from [threat of] natural disasters [like flooding].
- Fire protection/support [infrastructure needs to be measured]
- Certain infrastructure would be more important to certain industry. Thus this indicator may miss certain issues that are relevant to attract industry that will benefit economic development.
- Focus needs to be directed to both northern and rural Manitoba.
- Need to include more than basic categories. Add advanced communication ability and utilities.

Staff workshop notes on public comments not reflected in participants' notes:

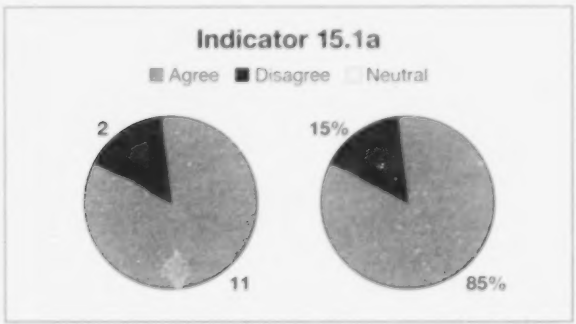
- Northern region: Increased usage of the trucking industry to transport goods should be an environmental indicator. The most sustainable way to move a product is by train versus highway and infrastructure for trucks. Disappearance of small grain elevators impacts on all dimensions. What is the social, economic and environmental impact on rural Manitoba from this?

Questionnaire Responses:

Do you agree that the issues presented in the basic services category are the key areas to track to help determine sustainability in Manitoba?



Given the indicator selection criteria, do the proposed indicators sufficiently address the issues?



Are there alternative indicators that would better represent the issue, if so, which ones could be replaced and why?

- Local councils.
- Expenditures on development, enhancement and upgrading new and existing infrastructure examined?
- Essentially, this index has to be invented based on a definition of "adequate".
- Should also compare quality of personal shelters between Indian Reserves and suburban areas.
- Types of connecting roads i.e. TransCanada versus gravel unimproved landfills versus modern.
- Level of service must be tracked to see trends.
- Infrastructure is too narrow a focus.

Do you have other comments on the basic services category?

- Must carefully define "adequate infrastructure" so it's efficient for northern Manitoba.
- Is this then to show where these services are inadequate? Depending on lifestyle some of these services are not required for good quality of life.
- Disagree on northern emphasis. There are a lot of east-west disparities also.
- Not all scattered communities can be economically serviced.

16.0 Employment

The employment category deals with the number of people employed in full and part time jobs and the value of work as measured by time and skill.

16.1 Issue: The labour force

This issue addresses whether or not we are meeting the labour needs of current businesses, and attracting new businesses. A knowledgeable, well-trained and experienced workforce is critical to meeting employers' needs. Varied and diverse job opportunities are necessary to meet workers' needs. Both are key to a healthy community. The final indicator(s) for this issue should give us an overall picture of the level and composition of employment and unemployment in the province. This will allow us to determine whether there is a diversity of job opportunities, equitable access to these opportunities, and a labour force that meets the needs of businesses located in the province.

Public Comments:

- Blue-collar wages have fallen [over] twenty years.
- Add the following issues: Job availability in communities, large workforce, few jobs, availability of SKILLED technical workers in the north to handle new jobs, training programs and social assistance to prepare the workforce for future jobs.
- Need to attract value-added industries like: oriented strandboard plant for forestry, smoked products and other value-adding processes for fish, mining, bottled water, fur products like traditional crafts, beadwork, etc., that have linkages to tourism.

16.1(a) Indicator: Labour force index

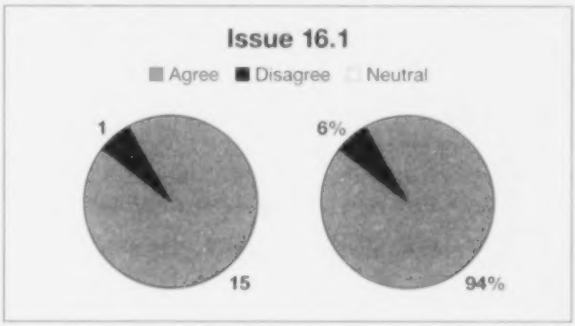
This index would present three measures: employment to population ratio (the number of people aged 15 and over compared to total population), labour force participation rate (number of "employable" people in the population 15 years and older who are participating in the labour force), and unemployment rate. Where possible, differences in age group, region, gender, Aboriginal status and occupation will be highlighted. Self-employed workers and unpaid family workers are included in the labour force participation rate. Information on visible minority groups in the workforce and disguised unemployment is currently unavailable. This indicator would tell us which portions of the population are, or are not, gaining employment, the type of work in which they are engaged, and the diversity of job opportunities available.

Public Comments:

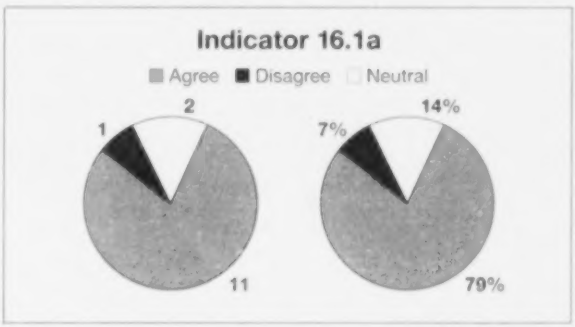
- Track wages as an indicator of economic well-being.
- Attach training dollars to work placement/track by income level.
- Need current income level/yearly statistics.
- Yes [keep indicator].
- Should have a measure of skilled labour – is there enough, what types of skill sets are needed.
- Employer/employee ratio – how diverse employees are [to track the size of businesses and the relative importance, employment-wise, of large versus smaller businesses].
- Good that they are flagging Aboriginal component.
- There is a need to include supply and demand in this labour force indicator. Skilled employees are sought out by companies all over the world. Youth are trained and educated in our province and then we find them moving out.
- Need to track the number of jobs requiring advanced education, the number of people who have advanced education, the exodus of those with advanced education.
- Linkage between employment/wages and the economic activity in the province.
- Location of employment and wage distribution by industry.
- [Measure] full time versus part time employment.

Questionnaire Responses:

Do you agree that the issues presented in the employment category are the key areas to track to help determine sustainability in Manitoba?



Given the indicator selection criteria, do the proposed indicators sufficiently address the issues?



Are there alternative indicators that would better represent the issue, if so, which ones could be replaced and why?

- Number of small businesses that are not making enough money to meet the minimum living standards for the owner.
- The Stats Canada information is so old as to not be a lot of use. Some communities have community plans and they have much more accurate and up-to-date information. Also, branches such as the Employment centres have workers who provide service to communities, those people usually have very good ideas of the actual conditions in the communities they visit.
- What is disguised unemployment?
- Go back to "need" not what business wants. Availability of work, quality of work, etc. See also below (demographics category) where 16.1(a) [Labour force index] belongs.
- Need a breakdown by industry. How many unfilled positions by industry.
- Type of employment – trend toward highly skilled or specialty trades (aerospace) are important.
- Also of interest – are people able to find jobs for which they are trained?

Do you have other comments on the employment category?

- I don't know if there is any way that the Stats Canada information can be disseminated earlier, It seems to take forever once the stats are taken to get the information back. It would seem in these times of technology someone could devise a quicker format to get the information back out to the public. For example, I needed community information last week and asked the HRDC Labour Market Analyst for it and I received a beautifully, just written, report that came from the 1996 stats. I, in fact, had a more up-to-date document from the community. So in fact, the LMIA was wasting his time to prepare that document.
- First Nations people must be reflected in this indicator.
- Must consider seasonal employment in sustainable employment.
- Breakdown of employment stats by age groups, to indicate where and when situations will arise in what fields.
- Baby boomers retiring. Gen-X – term occupations... Youth job creations...
- Overall employment rates don't show the shortage in the information workers. The numbers need to reflect the workers and skills required by industry.
- Are we following a national trend or diversifying in a direction we planned?

General Workshop Comments on the Economic Dimension

- Direct aboriginal consultation is a must. Effort needs to be made to meet directly (with) MKO, AMC, tribal councils, MMF, NACC, Northern Round Table.
- Appropriate language - simplify relative to northern conditions.
- Recommend northern scenarios.
- Recommend facilitation by northerners.
- Address issues of the North. Indicators by region versus province, may possibly need other indicators. Statistics can play games with numbers.
- Why minerals under environment and not in economics? Minerals indicator has no comparisons to value/metal markets. [Need to] define "reserves" [in the minerals category]
- Suggestions: definitions of words – use industry standards acceptable from professions who employ the word for "reserves", "adequate", "suitability" and "affordable".
- Province needs to work with others (mining, etc.) who are already working on sustainability indicators for their sector.
- Let's make sure that we move beyond indicators which are measurements and onto incorporation of sustainable development into developmental plans. Otherwise we are only going to know what was wrong with no initiative to fix. Basically ensure we move beyond indicators to initiatives.
- From an economic perspective, we feel that cost of being prohibitive is the prime motivator for sustainable development. Short term pain and/or politi-

cal fallout for long term quality of life – economic/environmental/social – of a community.

- Focus on economic dimension over environmental dimension in western Canada – tendency measure.
- Economic dimension should balance negatives and positives.
- Division between renewable and non-renewable is less well-defined, e.g. mined minerals can be recycled. Fisheries are not renewable in most places.
- Stocks and flows of natural resources are measured by indicators, but there is a need for indicators to indicate the environmental health/quality of management of that resource.
- Linkages between indicators need to be identified in any reporting document.
- Regional breakdown of indicators – if not available then government agencies can be instructed to collect this information in the future.
- Perhaps add a business category, with business ownership succession - local ownership, employee ownership; business diversity - resilience of business community; spatial diversity/density of businesses.

HUMAN HEALTH AND SOCIAL WELL-BEING DIMENSION

17.0 Education and Training

The education and training category deals with the quality and effectiveness of education and training.

17.1 Issue: Quality and effectiveness of education and training

A well-educated population is a basic component of sustainable development. People cannot make informed decisions unless they have adequate information and the capability to analyze that information. It is important to track how well education and training systems are functioning to determine whether they are meeting the demands of society. Information and education are key to the knowledge, skills and values we need to make direct connections between every day activities and sustainability issues. The final indicator(s) for this issue should give us an overall picture of the quality, affordability and effectiveness of education and training. Aboriginal issues will be highlighted if possible.

Public Comments:

- Economic influence on education: money in versus money out, how do you measure success of education?
- [Need to balance] economic needs versus the needs of the province, e.g. [need for health care workers].
- Too narrow. Left out the second part, which is life long learning. Educating the whole population goes beyond the prepared indicators.
- Too focussed on training for employment.
- Experience of teachers going to teach on reserve (often first time teachers), high turn over of teachers. Indicator: are there different standards of education?
- [Schools] bump kids up grades due to age even when not ready academically to advance.
- Is the education people walk away from school with effective in the workplace? E.g. does it keep up with technological advancement?
- Is there access for people who want to go back for further training?

- Is the current workforce appropriately trained and qualified to take jobs that become available?
- Are the skills of workers transferable if the main form of economic activity were to change, e.g. if mining decreased and pharmaceutical marijuana production increased?
- Must ensure quality of teachers' education. Keeping up with changes with new and experienced teachers.
- Adequate, practical education in the classroom at all levels of education /institutions.
- [Need to measure] accessibility to affordable post-secondary education.
- [Need to measure] school to work transition programs.
- Need to accommodate diversity more, and encourage educational diversity more.
- Add indicator: participation rate in post-secondary education and training. Analyze and monitor along gender lines.

17.1(a) Indicator: Literacy rate

This indicator refers to the proportion of the population that has the ability to understand and use printed information in daily activities at home, at work and in the community, to achieve one's goals and to develop one's knowledge potential. It includes capability to understand texts, various types of documents and arithmetic operations. It rates the population's level of literacy on a scale from one to five, one being low and five being high. A rating of three is considered literate. Low levels of literacy affect an individual's ability to find a job and to perform well in that job, and are likely to lead to lower paying jobs, reinforcing inequities that may have contributed to the low literacy skills in the first place. Literacy levels also have an impact on an individual's ability to participate in society and culture. Assessing literacy offers a measure of the effectiveness of education systems.

Public Comments:

- [Track] traditional languages.
- Does this include language of choice?
- Good indicator.
- Not acceptable for anyone in this day and age to be illiterate.
- Literacy is an effective indicator.

17.1(b) Indicator: Graduation rate

This indicator measures the number of students graduating from high school as a percentage of the total population. If possible, the analysis of this indicator would examine graduate follow-up, meaning whether students obtained a job in the field they trained for, whether or not that job was in Manitoba, and the salary. This would provide information in whether graduates are able to work in Manitoba in their chosen fields, or whether they are attracted elsewhere by better jobs and salaries, i.e. brain drain.

Public Comments:

- [Measure] post-secondary education numbers, including technical institutions, by gender and sub-population.
- [Measure] job satisfaction versus chosen field.
- [Measure] graduation in specific fields.
- [Measure] older adult learning programs
- [Measure] community Access Programs sites.
- [Measure] contribution as volunteers.
- [Track] continuing education for adults: Red River Community College, Universities of Manitoba and Winnipeg.
- Tracking beyond academic enrolment [to successfully obtaining a job in chosen field].
- Level of education that people are attaining. Need to document both brain drain and gain. Link to ability to get job.
- Graduation rate does not reflect quality and effectiveness of education and training. Suggestion to remove this as an indicator. Literacy and other skills tests to assess quality of education.
- Majority of recent high school graduates working or going to [post] secondary education, recent survey indicates (all except 1 of 176).
- Clarify/specify secondary education – indicates all institutions and tracking of these students.
- Measure brain gain as well as brain drain with regard to graduates finding jobs in Manitoba.
- Track location of students for a number of years, not just short term.
- Use a standard – high school graduation – as indicator.

17.1(c) Indicator: Student achievement

This indicator would provide information on the results of provincial tests and national assessments. It is not agreed whether these tests and assessments are an adequate reflection of scholastic achievement and knowledge obtained. Care will need to be taken in interpreting the test results.

Public Comments:

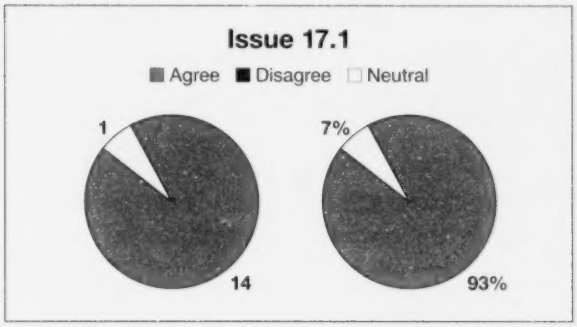
- [Need] culturally appropriate standardized tests which get at educational standards being implemented in schools.
- What does "achievement" mean? Define more explicitly, e.g. breezing through school, struggling through school, success after school.
- Care will need to be taken in interpreting test results. Tests as a standard of education not as a reflection of student achievement.
- Standardized testing approved by this group.
- Using standardized tests as they have been used is not a good indicator. Portfolios are one alternative.

Staff workshop notes on public comments or questions not reflected in participants' notes:

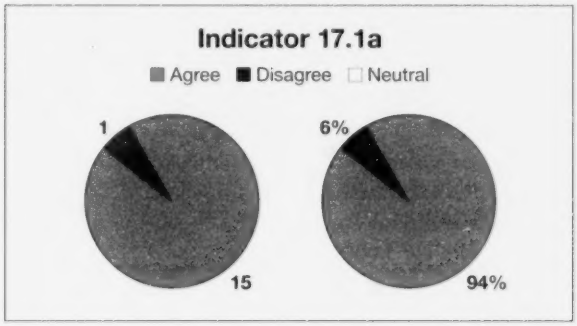
- Need to measure progress by sub-groups, regions. E.g. community that has no high school may have different linkages to other categories.
- Should be university assistance to rural students for higher housing costs as they have no family there.
- University professors' kids used to, and may still get free tuition, which is unfair.
- Comprehensiveness of training, i.e. not just Arts, but technical, science, etc.
- Graduation rate: need post-secondary rate as well.
- Add participation rate in post-secondary education and training. Dropout negative. Use gender specific data due to educated mothers having high impacts on children.
- Cost re attendance of post secondary.
- Are people ready to go in the direction they want once they leave the education system – either to the workforce or to receive further education?

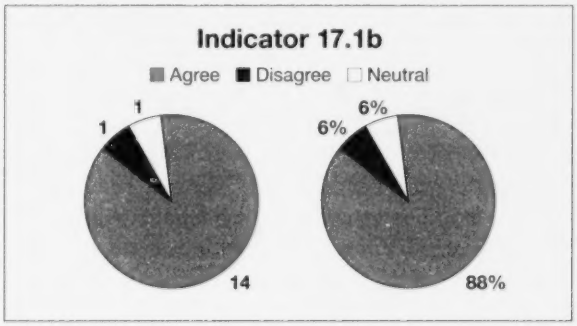
Questionnaire Responses:

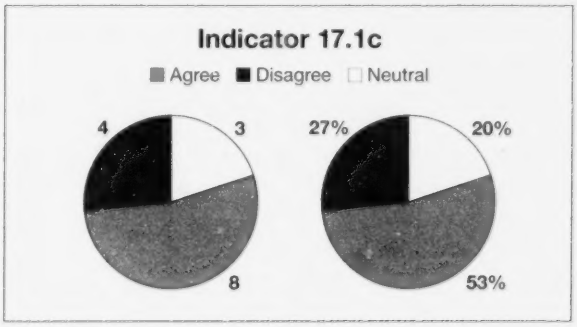
Do you agree that the issues presented in the education and training category are the key areas to track to help determine sustainability in Manitoba?



Given the indicator selection criteria, do the proposed indicators sufficiently address the issues?







Are there alternative indicators that would better represent the issue, if so, which ones could be replaced and why?

- Access to education/training important. Distance education and training and rate their retrograde.
- Is there tracking for dropouts that do become successful?
- Support infrastructure – [see] added comment [re education infrastructure in category] 13.0.
- 17.1(a) [Literacy rate]: computer literacy required.
- 17.1(b) [Graduation rate]: high school is too low a level for the new future workforce, i.e. the information worker.
- 17.1(c) [Student achievement]: Some indicator to show trends towards graduation in fields centred on conservation and resources.
- You must also measure ratio of spending to help children with learning disabilities to rest of student population.
- Provincial tests are a poor way of measuring student achievement. A broader, more subjective assessment of student abilities is fairer. Students with learning disabilities are intelligent but discriminated against in provincial tests.
- Why are Aboriginals not included in this tracking?
- [Add new indicator] 17.1(d) level of student debt.

Do you have other comments on the education and training category?

- To limit opportunities for just southern communities and forgetting about the north is very short sighted.
- Diversification of educational institutions away from southern urban centers will provide professional development opportunities, jobs in the education fields, focused northern research, and raising the educational profile of northerners are important factors, as well.
- Linkage between private sector and education and training institutions need to be strengthened.
- You need to look to the future for sustainability – what will the future economy look like, and the skills needed to participate.
- Do not agree with last sentence – you have not considered the learner's ability, e.g. fetal alcohol syndrome, learning disabilities, etc.
- 17.1(b) [Graduation rate]: Again, moving elsewhere is not just because of better jobs and salary.
- 17.1(c) [Student achievement]: You say it yourself.
- More work experience needed for students in hands on situations.

18.0 Equity and Rights

The equity and rights category deals with social justice and human rights for all, including fairness and equitable living.

18.1 Issue: Human rights and social equity for individuals, groups and communities

The equality of all people is basic to the concept of sustainable development as is the ability to provide the necessities of life and have access to opportunities offered by society. In *Our Common Future*, The World Commission on Environment and Development stresses the importance of inter-generational and community equity. This issue addresses people who are economically disadvantaged, have physical or mental disabilities or illnesses, or are unable to participate fully in society due to economic circumstances or bias toward their particular group. All Manitobans have a right to access goods, services and opportunities. The final indicator(s) for this issue should give us an overall picture of how tolerant and inclusive our society is and whether opportunities are available and extended to all our citizens. Aboriginal issues are a particular focus here.

Public Comments:

- [Measure] self-perceived equity.
- Has the pendulum swung too far? Is there reverse discrimination?
- Agree with the indicators, but should have some individual choice on giving out information. Statistics gathering should not be too invasive.

18.1(a) Indicator: Income distribution and dependency

This indicator would provide information on the average annual or weekly income by ethnic group, gender and family group. It would include information on the proportion of the population that relies on government sources of income rather than earned income for their food and shelter needs. Government sources of income include pension, employment insurance and welfare. Child poverty would be examined in the analysis of this indicator.

Public Comments

- Too broad.
- [Measure] household income.
- [Measure] personal income dependency.
- [Include] seasonal income?
- Dependency? [Needs] clarification.
- Hardly social equity if there's a bias. Didn't like the wording!!
- Major indicator of social equality is number of people living in poverty and document growing gap between rich and poor, number of people on welfare.
- Use income distribution not government dependency. This is a loaded term, politically charged judgmental language, e.g. do they mean people on pension receiving social assistance versus teachers, civil servants, doctors, politicians.
- Also [include] number of working poor, e.g., living on minimum wage.
- Salaries, economic safety net and corporate welfare.
- Define "dependency" better.
- Is income security fairly distributed? Is income security, EI, CPP enough for people to live on? Do all who need it have access to it?
- Is the money available to a person/family enough to meet his/her/their needs, e.g. minimum wage?
- Minimum wage would be an indicator.
- The discrepancy/distance between the highest and lowest percentiles of income earned.
- Income distribution – division by quartile? Normalize in some way by purchasing power.
- [Use] Genie Index – percentage of wealth plotted on a graph: y axis – percent of wealth, x axis – number of individuals.

18.1(b) Indicator: Labour force composition

This indicator would provide information on the type of positions held by persons belonging to target groups to help determine whether all people have access to employment opportunities. The population would be presented by selected demographic and socio-economic characteristics, showing minority subgroups with respect to male/female proportion of the labour force, activity by industry divisions and by occupation. The Manitoba Human Rights Code does not allow employers to reject applicants for jobs on the basis of physical characteristics, unless an employer can prove that such requirements are necessary for the performance of the job. Systemic discrimination would be reflected through the absence or low representation of demographic groups of Manitobans in each employment position level.

Public Comments:

- [Look at] professional competence.
- Equality versus equity.
- Self-selection bias. Not where you are in the labour force, but the pay you are receiving, i.e. working poor.
- [Measure] number of people from marginalized groups holding professional positions in middle income jobs, e.g. teachers, social workers, health professionals.
- [Measure availability of] skill development for unskilled workers.

18.1(c) Indicator: Adequate, suitable and affordable housing

This indicator would track the number of households experiencing one or more of the core housing problems: adequacy, suitability and affordability. Adequacy determines if a household's dwelling is in need of major repair or is lacking basic facilities. Suitability determines if a dwelling is a sufficient size to accommodate a household. Affordability determines if a household's basic shelter costs exceed 30% of the gross household income. Homelessness in Manitoba would be discussed, although tracking actual numbers of homeless people is difficult.

Public Comments:

- [Measure] number of persons per house.
- Homeless tracking (how). Should be discussed.
- Be sure to measure all three: adequacy, suitability and affordability.
- 30% of gross income is not "affordable". Translates into about one half of net income for low-income earners.
- Suitability: number of people per square foot. What is enough space for healthy home environment?
- Be clear how are homeless statistics being gathered and estimated?
- Affordable housing [needed], not shelters.

18.1(d) Indicator: Access to nutritious food

This indicator would track availability and cost of nutritious food. It would also look at people's diets to determine whether people are properly educated about nutrition and health benefits. This indicator has a strong linkage to determinants of health. There is currently no established measurement for this indicator.

Public Comments:

- How do you measure what's nutritious?
- [What about] cost of food?
- Traditional foods [need to be accessible too].
- [What about] home grown [foods]?
- [Need] educational programs [to ensure people know about nutrition].
- Highlight importance of "availability": cost of nutritious food.
- [Measure] use of food banks, cost of transport in northern and remote communities, need for all weather roads.
- Some questions raised about the necessity of tracking availability and cost of nutritious food.
- [Rename indicator] Access to nutritious and affordable food.
- Nutritional education.
- Finances - food security, proliferation of food banks. 18.1 [Human rights and social equity for individuals, groups and communities] doesn't mention food banks.
- Food choices being made - how to monitor.
- If a certain percentage of income is considered appropriate for housing, why not for food? Logic? It would be better to use as an indicator, a set amount of money, say $6.00 in year 2000 dollars, and see what percentage of Manitobans fit this. Similar approach could be used for housing.

18.1(e) Indicator: Equitable access for persons with disabilities

This indicator would provide information on the availability of transportation, technical aids, services and facilities for people with disabilities. The indicator would be expressed by type of disability and the range of specialized goods and services available. Discrimination on the basis of physical and mental disability is prohibited in the Manitoba Human Rights Code.

Public Comments:

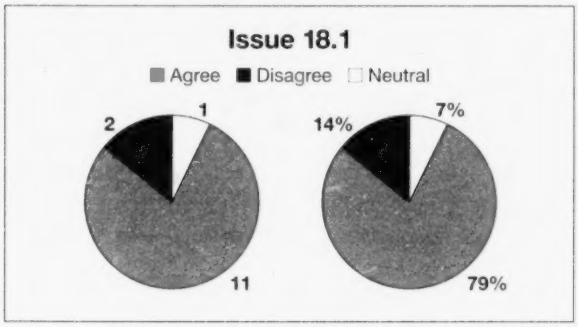
- [Track] number of people with disabilities who are employed.
- [Track] number of workplaces making necessary adaptations.

Staff workshop notes on public comments and questions not reflected in participants' notes:

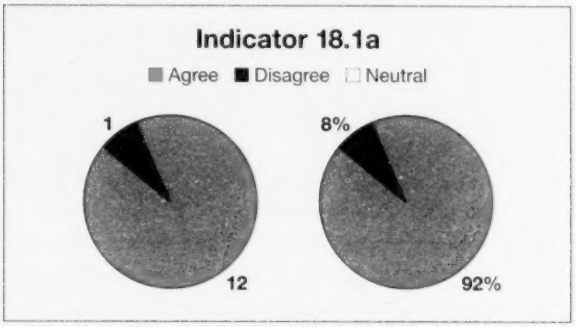
- People with disease re: access in equity and rights. Not just people with disabilities. Need to look at the system differently.
- Availability and cost of food not an issue in this community.
- Must define nutrition. Go to a professional association for these definitions.
- Right to clean air, water and natural spaces.
- Human rights title is bad. Don't know what it means and is poorly described.
- Annual versus weekly wages. What about seasonal, household/personal income?
- Workforce composition - issue of equality (same) versus equity (treated as people with different needs)
- Food – Don't know what's being proposed, but good to measure.
- Disabilities – hard to measure because people don't want to self-expose. Access to workplace should be considered.

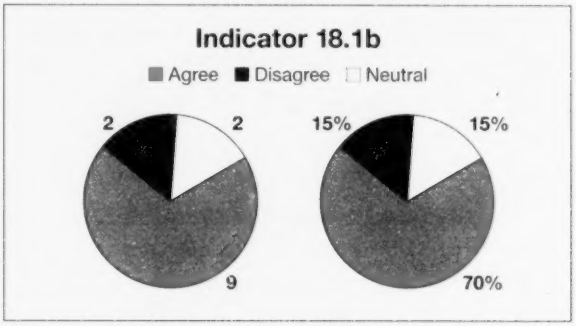
Questionnaire Responses:

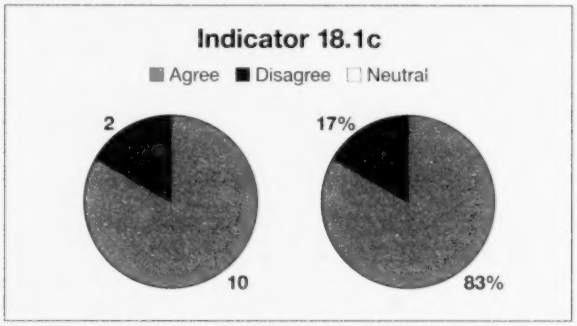
Do you agree that the issues presented in the equity and rights category are the key areas to track to help determine sustainability in Manitoba?

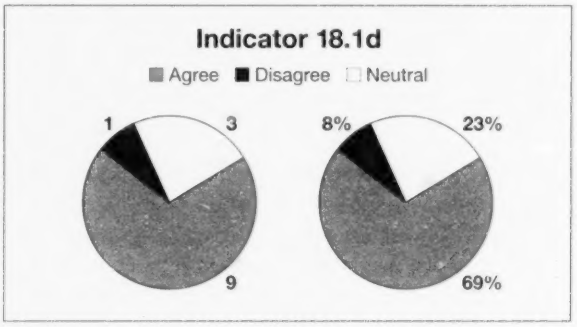


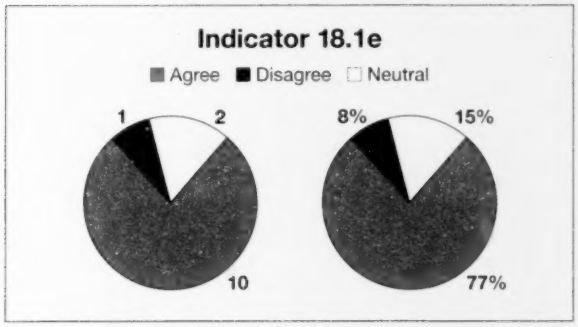
Given the indicator selection criteria, do the proposed indicators sufficiently address the issues?











Are there alternative indicators that would better represent the issue, if so, which ones could be replaced and why?

- Reports from communities.
- 18.1(d) [Access to nutritious food] out of place: more [of a] health [issue]? Examine law offenders [in the equity and rights category]?
- Must include all groups of people to be fair.
- 18.1(c) [Adequate, suitable and affordable housing] and 18.1(d) [Access to nutritious food]: Government should take steps to encourage/facilitate local use of resources in rural areas. Then they should do surveys to track use of fuel wood/domestic fish, domestic wildlife, berry and mushroom picking etc., to see if their efforts are successful.
- Section 18.1(e) [Equitable access for persons with disabilities]: This should not be limited to physical disabilities but include learning disabilities too.
- I think the elderly are also an important minority to follow, not just Aboriginals.
- 18.1(c) [Adequate, suitable and affordable housing] will be difficult to show trend with five-year data.
- 18.1(d) [Access to nutritious food] difficult to track.

Do you have other comments on the equity and rights category?

- Caution must be exercised when considering 18.1(b) [Labour force composition] so that policy doesn't create the very thing that it is meant to address. More thought needs to be given to these indicators. Other indicators must exist that are more applicable, i.e. age groups, Aboriginals, Caucasians, etc. There are as many whites living in poverty as Aboriginals. The only factor is the whites are spread out further than the Aboriginals.
- We are getting much closer to what we want for sons and grandsons!
- Don't try to legislate equity, it will cause inequity. Companies will hire the best person for the job. People are to be judged on their merits nothing else, and not be forced into anything. This includes government agencies.
- Manitoba should define mental disabilities as this is a rather loosely defined term.
- 18.1(b) [Labour force composition]: Your last sentence does not take into consideration certain knowledge and skills for the job that may be the factor until this group acquires this education.
- 18.1(d) [Access to nutritious food]: First sentence agree with but not sure how you would look at every diet and who determines what is good for me as opposed to another diet?
- While equity issues are essential, human right is a broader topic.

19.0 Community and Culture

The community and culture category deals with the opportunity to belong to a community and share its beliefs and culture.

19.1 Issue: Community participation

Beyond putting something back into a community, the quality of life, health and safety benefits of participating in community life are wide spread. Tracking the availability of and access to community organizations and the level of participation and volunteerism within those organizations would provide a picture of the relative sense of community found in regions of the province.

Public Comments:

- Definition of community? Regional boundaries? Indicators hinge on the proposed definition of community.
- People whose voice needs to be heard aren't coming out or being heard on a day to day basis. Difficult to sit on a committee and become [mocked].
- Recognize people without jobs devoting energy to surviving.

- Note: [it is] people [who are] retired and people with jobs who can afford to volunteer.
- [Include] "Informal" volunteering, e.g. neighbours helping neighbours.
- Pride of community and volunteer work through education courses in school, i.e. Nova Scotia.
- Limited education on community youth involvement.
- Closer connection between community [volunteers] and youth.

19.1(a) Indicator: Participation rates of community organizations, including volunteer work

The number and level of participation in community organizations is currently not tracked. A proxy measure could be the number of Healthy Communities organizations, Community Round Tables and community clubs, by region. Augmented by information on volunteer work (average and total volunteer hours worked and type of volunteer activities), a picture of community participation rates should emerge. Measuring participation and sense of community and belonging is difficult, and there is no commonly agreed upon method. Community club information may only be available for the City of Winnipeg.

Public Comments:

- Central coordinating body for tracking volunteer work.
- Level of decision making [that] groups have in community organizations [is] marginalized.
- [Measure] barriers to participation, e.g. no childcare, low-income single parents, literacy rates necessary to be on Board, institutional culture, racism.
- [Measure] number of block parent signs in homes.
- Non-formal community support, e.g. indicator to measure how much neighbours can rely on one another (or perceive they could). This would give a more complete picture than "volunteerism" rates alone.
- Community club information only available for the City of Winnipeg not correct! Lots of data available, example, Association of Manitoba Arts Festivals.
- How broad-based (socio-economically) are the participation rates?

19.2 Issue: Preservation of heritage and culture

Languages and tradition are the backbone of culture. Preserving them is fundamental to a healthy, thriving community. Sharing and sustaining heritage and culture provides opportunities for understanding and fellowship, and is an important link with the past. Remembering traditions and spiritual values help people connect to their culture and develop their sense of identity and pride in themselves and the accomplishments of their ancestors. This further enhances well-being and commitment to community.

Public Comments:

- Culture should be preserved – but not paid for by tax dollars.
- Customs and traditions need to be promoted.

19.2(a) Indicator: Primary language spoken at home

This indicator would be expressed by type of language and the percentage of the population speaking that language. Tracking this information over time will alert us to the possibility of losing a heritage language. Heritage language programs in the province will also be discussed. Preserving heritage languages helps people learn from the history and traditions of others, and helps to preserve diverse cultures. This would serve as a proxy measure for the preservation of culture and heritage, although it is understood there is far more to a culture than the associated language.

Public Comments:

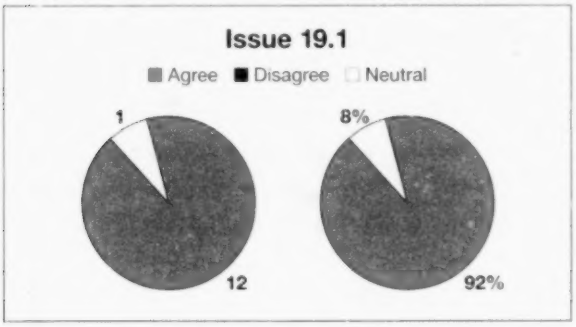
- Not sensitive enough. Societal aspect is not measured.
- [Include] availability of education in your first language, e.g. Cree.
- Also measure first languages lost.
- Can people study their language in school – is it made available to them, encouraged?
- [Include] availability of exposure of people to other cultures, to people themselves, to their history.

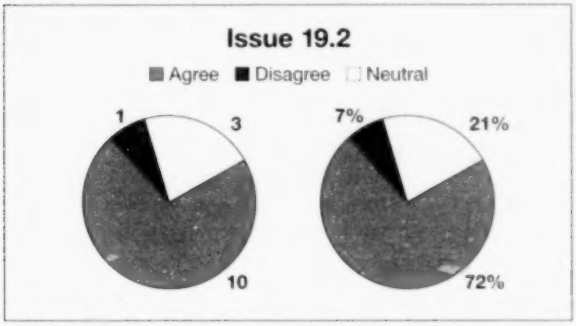
Staff workshop notes on public comments and questions not reflected in participants' notes:

- [Measure] primary language used at home versus spoken at home.
- Number of resident advisory groups a good indicator of participation rates.
- Need more service industries but not sure how to measure as a part of community.

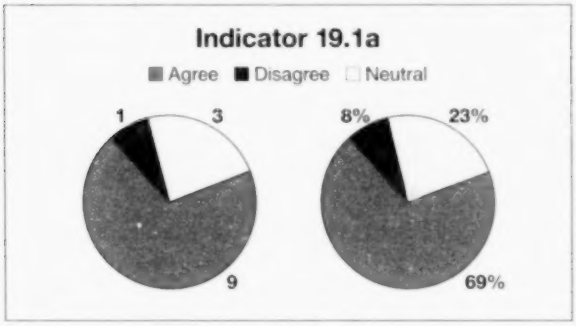
Questionnaire Responses:

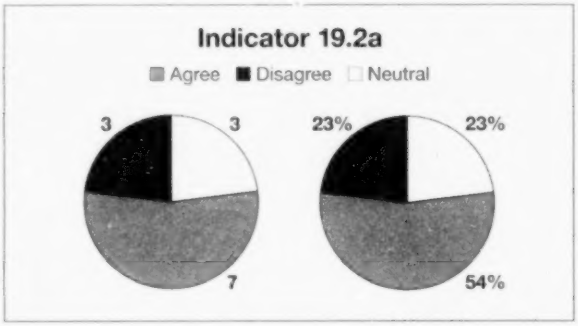
Do you agree that the issues presented in the community and culture category are the key areas to track to help determine sustainability in Manitoba?





Given the indicator selection criteria, do the proposed indicators sufficiently address the issues?





Are there alternative indicators that would better represent the issue, if so, which ones could be replaced and why?

- 19.1(a) [Participation rates of community organizations including volunteer work]: Youth volunteerism. Social support network through service clubs be examined/considered.
- Who is as critical as how many.
- 19.2(a) [Primary language spoken at home]: Percentage of graduates with heritage/culture and related degrees - anthropology, nature studies, history, geography.
- 19.1(a) [Participation rates of community organizations including volunteer work]: Don't show or judge Manitoba communities based on Winnipeg.
- A sample phone interview might help. Also list all NGOs and have them give numbers of volunteers.

Do you have other comments on the community and culture category?

- Culture is in a community. It is affected through external forces (i.e. government globalization, etc.). It needs to be fostered, not preserved, thus indicators should be indicative to that.
- Please don't concentrate on Winnipeg. Community club info can be obtained from every town and city in Manitoba.
- Volunteer organizations run small communities and are influential than the ones in Winnipeg.
- Very doubtful about this approach. Needs time to think through the "need" and the way "community" helps to meet it.
- I don't know!

- Volunteer short-term/event-oriented, are easy to find in most cases. The issue is most events take from six months to three years to plan and prepare. Who are these people: name, community, age, occupation. I would suspect they are: older (40-65), affluent or retired or supported by their employer, WASP, except for specific population events. In many communities they are the same people with very little involvement from young people.
- We now have many separate communities – it should stress that people are "Canadians" first!!!
- 19.1(a) [Participation rates of community organizations including volunteer work]: Every small town can tell you about club participation and volunteer work.
- 19.2(a) [Primary language spoken at home]: Preservation of language is not necessary to preserve heritage and culture. The language can be for a few academics that are your resource. Less emphasis should be placed on this and rather learning another one, two or more languages is a plus for you as a person.
- It is unclear what you mean by a heritage language.

20.0 Governance

The governance category deals with the effectiveness of leadership and management of provincial affairs, institutional guarantees for participation in decision-making, and accountability of institutions and officials, both elected and appointed.

20.1 Issue: Opportunity for participation and redress

Public participation can take many forms, including voting in elections. The indicators should illustrate the capacity of our government structure to provide information, enable public participation, and enhance flexible, community based and holistic decision-making. People must believe that they can make a difference and understand how they can participate to enable integration of grassroots knowledge into decision-making. People must have avenues for redress if they feel they have not been adequately represented by their government. This is reflected, in part, through voting rates.

Public Comments:

- Not tracking consultation between organization/agency and public, and at all three levels of government.
- [Include] participation in decision making.
- How do we measure public displeasure and dissent?

20.1(a) Indicator: Voting rates

This indicator would compare the number of people who voted in municipal, provincial and federal elections against the total number of eligible voters. Information would be presented by constituency or federal riding, as well as by population demographics, if available. When people exercise their right to vote it indicates satisfaction with the representative democratic system, and the feeling that voting can make a difference. This is an internationally agreed upon measurement of democratic opportunity for participation and redress. However, it does not take into consideration grassroots public participation, holistic decision making, or the integration of traditional knowledge in decision making processes.

Public Comments:

- Voting is not the prime indicator. Are the opportunities being utilized? Need indicators that include other opportunities for public participation.
- [Measure] number of human rights complaints, how long to resolve.
- How representative are political representatives, appointed committees and boards, senior management in terms of the people they serve, e.g. ethnicity (e.g., Aboriginal), economic circumstances, gender, etc.
- [Measure] nomination rate, e.g. are people acclaimed or voted in. Also, representation, e.g. of women, Aboriginal people.
- Voting rates are a good indicator of the degree of public interest.
- [Measure] voting rates in other groups, e.g. band councils.

20.2 Issue: Fiscal accountability

The challenge of sustainable development is to be able to live within our means, instead of borrowing and leaving debt for future generations. Within government, this means jurisdictions can no longer live on credit and must exercise responsible public spending. Most governments are focusing on making operations more efficient and effective. The elimination of operating deficits has been a priority for most governments over the past few years. Now efforts are shifting toward tackling the debt that has built up over several decades. The information on fiscal accountability would tell us how government is managing its resources. The final indicator(s) for this issue should give us an overall picture of the effectiveness and efficiency of government operations.

Public Comments:

- Not clear [what the] relationship [is] to sustainable development.
- Human and structural impacts/costs of government cutbacks/balanced budgets, e.g. less sanding of roads, increased accidents.
- The group is concerned that one small paragraph is devoted to fiscal matters.
- How do we hold government accountable for honest reporting of financial matters? Who do you believe? Figures lie and liars figure.

20.2(a) Indicator: Fiscal accountability

This indicator would provide a comparison between provincial revenues and expenditures, in relation to provincial debt (money the province owes). It would examine the cost of paying interest in the debt and how much of our long-term debt is paid down each year. It would also discuss budget allocations for the priorities of government.

Public Comments:

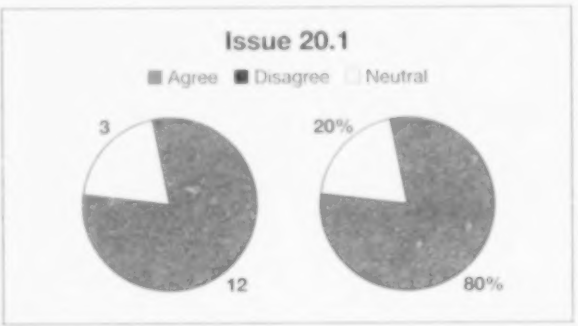
- How does this represent accountability?
- Saying if you balance you are being fiscally accountable. Not just balancing the budget, it's the bang for the buck.
- Measuring waiting lists for services, interview people who queue, people who give up trying to access services because of barriers, e.g. dental access money.
- [Track] ability to obtain information on governance, decisions made.
- [Track] access to ombudsperson.

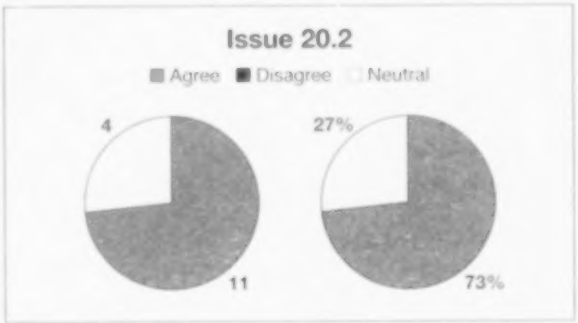
Staff workshop notes on public comments and questions not reflected in participants' notes:

- Measure of policy compliance, like the federal Commission on Environment and Sustainable Development.
- Sustainable development policy booklets: there should be indicators for each of these policies around compliance and fulfillment.
- Policies should be measured.

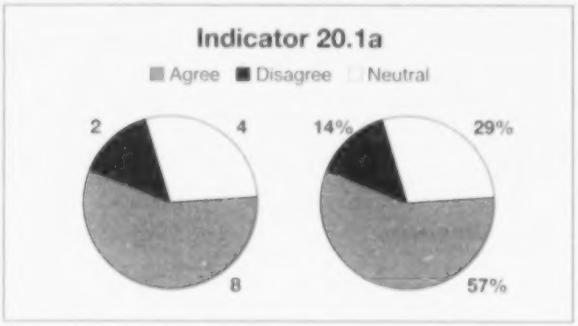
Questionnaire Responses:

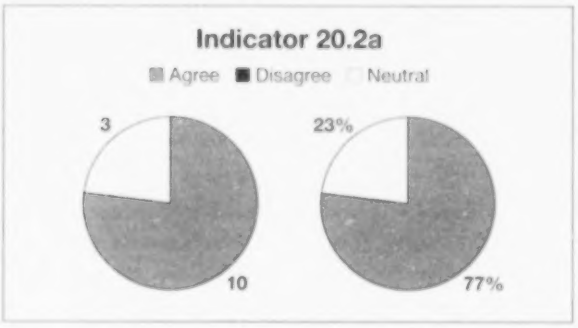
Do you agree that the issues presented in the governance category are the key areas to track to help determine sustainability in Manitoba?





Given the indicator selection criteria, do the proposed indicators sufficiently address the issues?





Are there alternative indicators that would better represent the issue, if so, which ones could be replaced and why?

- 20.1(a) [Voting rates] is misleading. Satisfaction and/or perception of public officials by public [is a] better indicator.
- Think other measures besides elections! Access, participation with government, etc.
- Agree 20.2 [Fiscal accountability] is needed. See note on dividing the report (under demographics category).
- We also need to consider the cost of governance. Note [comment re cost of governance in category] 13.0 [Economic activity].
- 20.2 [Fiscal accountability]: [Include] tax rates.
- After making a commitment to simplify government, they should quantify the percentage of legislation that meet the criteria of:
  - Brevity and understandability.
  - Actual need for change.
  - Not veiled taxation. The real indicator might be percentage of legislation enacted, percentage of legislation amended, percentage of legislation repealed.
- You also need to measure the participation in any public forum. This can give you a sense of participation or apathy.
- Participation in other processes as hearings. This issue of fiscal efficiency is overplayed.

Do you have other comments on the governance category?

- Balanced budget is important to a degree. When it negatively affects sustainable development it becomes contradictory. Budget trend should be examined within a microeconomic perspective.
- Must also include tax rates, in order to be competitive, tax rates must be competitive to keep the skilled people, and higher level jobs which creates wealth, jobs, and thus a tax base for social services.
- People still don't feel there is enough meaningful public input to politicians. They should be mandated to hold regular public meetings with their constituents.
- 20.1(a) [Voting rates]: You say it in your last sentence.
- 20.2(a) [Fiscal accountability]: This is fine for government, now how can we help people to live within their means.
- Other issues are as important.

21.0 Health

The health category deals with the mental, physical, spiritual and social well-being of Manitobans.

21.1 Issue: Determinants of health

The determinants of health are the key factors influencing health. They include healthy child development, personal health practices and coping skills, physical environment, employment/working conditions, education, income/socio-economic status, biology and genetic endowment, and access to quality health care services. The special needs of Aboriginal people will be highlighted under this issue, if possible. Although they have made significant gains in health in recent years, Aboriginal people remain among the most disadvantaged of our citizens and have the poorest overall health. Manitobans face a wide range of choices and circumstances that affect their health. The lifestyle choices people make impact directly on their health. Circumstances can limit people's capability to maintain

a healthy lifestyle. Some determinants of health, such as physical environment, employment/working conditions, education, income/socio-economic status are discussed in more detail under other categories of the workbook, with linkages made to health.

Public Comments:

- Focus [is] on early years, but indicators are missing for the aging.
- State proven fact: income/economic circumstances is the biggest determinant of health.
- Analysis recognizes (but statistics in this section don't fully) that health is much more than the absence of disease.
- Very strongly agree these are key areas to track to help determine sustainability.
- Lacks spirituality/faith indicator. Ask if weekly/monthly spiritual contacts i.e. praying/attend church. Also include in satisfaction with life.
- Also lacks mental wellness/awareness indicator, stress, psychological well-being.

21.1(a) Indicator: Readiness to learn

This indicator measures a child's readiness to learn at school in five general domains - physical health and well-being, social competence, emotional maturity, language richness and general knowledge and cognitive skills. The four to five year old age group is studied. The measure is designed to provide information for groups of children in order to assess strengths and weaknesses in students, assess effectiveness of early childhood interventions and predict how children will perform in elementary school. This indicator addresses healthy child development.

Public Comments:

- What does this mean?
- How do you measure?
- Why is this not in education and training?
- [Measure] prenatal, postnatal [care], adolescent pregnancy.
- Should be [measured at] 2-3 years [of age] to enable time to work with child/family before age 5 years. Prevention/intervention at an early age.

21.1(b) Indicator: Healthy life choices index

This indicator addresses personal health practices and would provide information on choices people make regarding their health. It would possibly include choices made regarding such things as smoking, drinking, obesity and physical activity level. These data are presently being collected individually and an index has yet to be developed.

Public Comments:

- Too broad. Break [it] out.
- Healthy life choices index excludes some prevention.
- How to make healthy choices when living in an unhealthy environment?
- Healthy sexuality starts with healthy self-identity. Link to STDs, crime rates, not nurtured in homes, institutions.
- Add to healthy lifestyles: cost barrier to recreational opportunities (facilities, events, equipment, clothing, transportation to/from).
- [Add] statistics on violence, discrimination, workplace health and safety.
- Okay. Needs recognition to consider in socio-economic context.

21.1 (c) Indicator: Access to health services

This indicator would provide information on access to health services in the province, based on measures such as length of wait for medical and diagnostic services. Although this may not be the best measure of access to health services, it is the most understood and the data is available.

Public Comments:

- Ignoring community health centre component, mental health services, alternatives therapy clinics – prevention.
- Medical aspect very narrow. Reflects medical services not health services, i.e. speech pathologists, physiotherapists, prenatal program, etc.
- [Include] community nutritionists statistics from all health care professionals in addition to medical services.

- Biggest indicator to health in the province will be how poor the health care system will get, e.g. nurses average age 45? When they retire who will replace them?
- [Track] nurse burnout.
- [Track] doctor availability.
- Educated nursing students are leaving in droves.
- What is the reasonable optimum level of access to health services?
- How to measure abuse in the system – re number of doctor visits per patient?
- Is access to good health care limited by excessive salaries paid to professionals?
- Is there professional abuse of the medical system?
- [Track] access to health services in a timely fashion.
- Problem: there is no consensus on how to measure/define waiting lists. This point as worded doesn't capture the whole story of access to health services. Add an indicator: systemic health structures that would encourage and support healthful life choices, i.e., prevention. What effect/responsibility does the system (society) have on individuals' health?

21.2 Issue: Population health status

The health of a population is determined by tracking the level of general health and well-being, the ability to function, the existence of disease or health problems, causes of death and length of life. Demographic differences may mean differences in individual health status. Within the Aboriginal population, for example, substantial differences are seen from the rest of Manitoba's population. Living and working conditions, such as income, education level and employment are closely related to each other and to the range of factors that influence health. Poor health early in life can mean poor health throughout life, increasing the burden on the health care system and preventing individuals from reaching their potential. Therefore, programs to promote child health and prevent disease in children have been a focus for health and social agencies in the province. Ensuring that children get a healthy start in life is important to the long-term health and economic viability of a society. The final indicator(s) for this issue should give us an overall picture of the different health problems that may be affecting Manitobans, young and old, and possible reasons or lifestyle choices that are causing these trends.

Public Comments:

- Self-perceived health.
- Population health status indicators poorly represent the definition of population health.
- [Use] data from community health assessment.
- Community responsibility piece is missing.
- Reiterate earlier point: statistics needed on a regional basis, e.g. life expectancy: Canada rates 13th, but for our region much lower.

21.2(a) Indicator: Potential years of life lost (PYLL)

This indicator would measure the total years of life lost before age 75 by major causes of death and by age group. Unlike other mortality data which counts all deaths as an equal unit regardless of age at death, PYLL measurements only consider deaths before age 75 and weights them by age. This allows for comparison of death occurrence and causes by their impact on "premature death."

Public Comments:

- [Add] life expectancy.
- Good indicator.
- [Add] mortality rates by type (cancer, cardio).
- [Add] violent deaths/accidental deaths.

21.2(b) Indicator: Infant mortality rate

This indicator would provide information on the level of mortality, health status and level of health care in the province, as well as effectiveness of preventive care and attention paid to the health of the mother and her child. It is a ratio of the deaths among infants under one year old to the number of live births, for a given period of time.

Public Comments:

- [Include] birth weights.
- Good indicator. What are you comparing it with? How many years back - does increased prematurity reflect adequately in these statistics? Maybe increase these statistics to include infant morbidity/premature/mature deliveries in statistics.

21.2(c) Indicator: Ability to function

This indicator would provide information on the number of people in the province who have ongoing health needs. It is derived from responses to questions on long term activity limitation, disability days and perfect health. Long term activity limitation is defined as any limitation or disability on normal activities, at home, school or work. Perfect health is based on eight attributes: vision, hearing, speech, mobility, dexterity, cognition, emotion, and pain/discomfort. The study does not include peoples living on reserves, and the numbers may be too small to report at a regional level due to the categorical breakdown of questions. This indicator is reliant on the National Population Health Survey (NPHS) for data. Not all NPHS questions are followed through with consecutive surveys, so this indicator may not be calculated if the survey is used.

Public Comments:

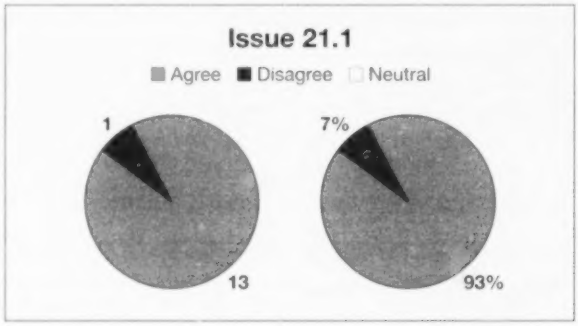
- Good term, but wording should be "optimal" not perfect health. This group does not meet this standard.
- Statistics should include social interaction/isolation, especially for seniors.
- Good indicator of needs for the future.
- [Include] physical and mental well-being.

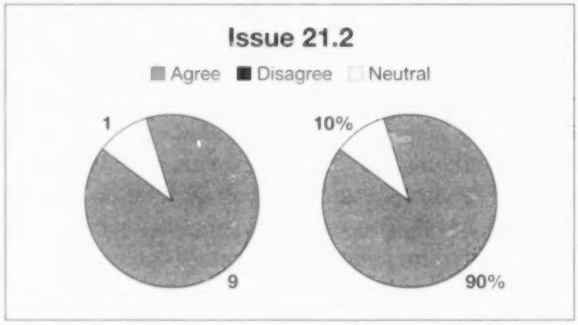
Staff workshop notes on public comments and questions not reflected in participants' notes:

- Ability to function – self-identification problem re quality of data.
- Add life expectancy.
- Health is much more than just the absence of disease – community participation and income. Need this information on a regional level.
- Need to investigate how other factors contribute to health.
- World Health Organization – Safe and healthy communities – European countries track a lot of health issues, but nothing is getting done. We do the opposite, we do a lot, but we don't track it or know where we are.
- Systemic health structures that support and encourage healthy life choices, e.g. design of roads for cars versus biking and walking. Focus on prevention, and how the system helps us.
- Ability to function should include mouth health.
- Measures for environmental health and quality needed.

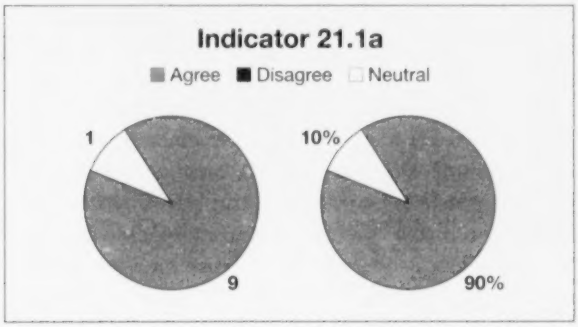
Questionnaire Responses:

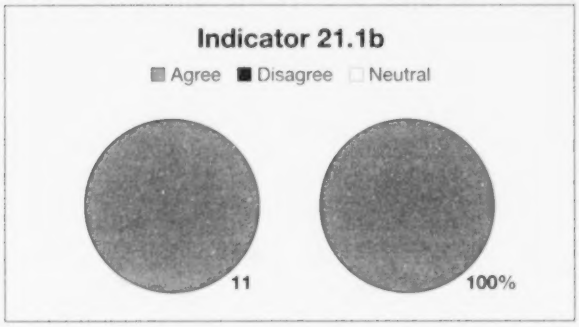
Do you agree that the issues presented in the health category are the key areas to track to help determine sustainability in Manitoba?

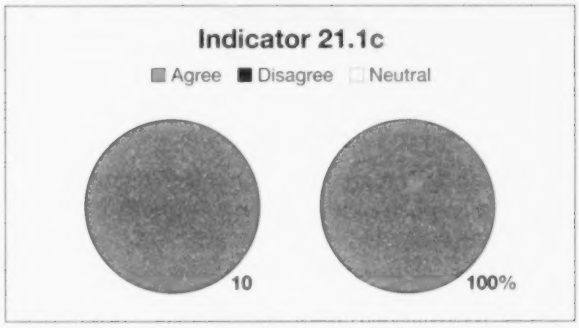


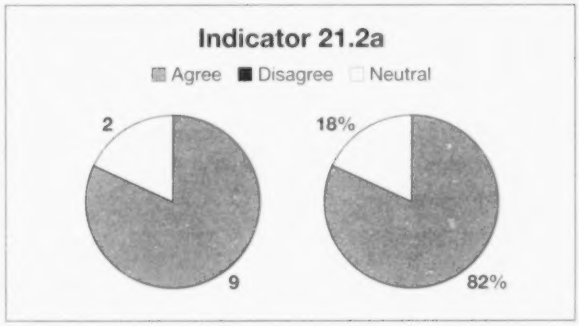


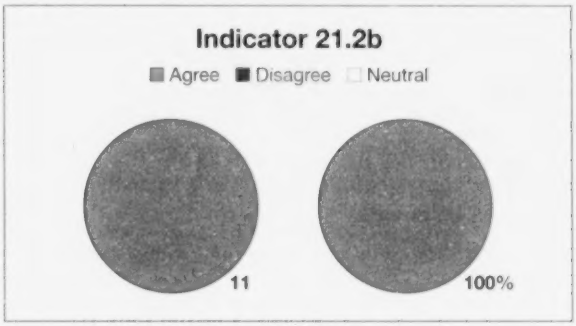
Given the indicator selection criteria, do the proposed indicators sufficiently address the issues?

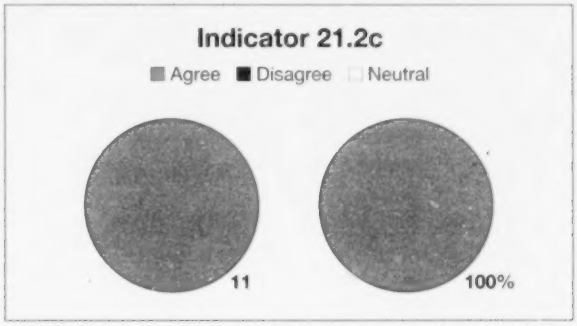












Are there alternative indicators that would better represent the issue, if so, which ones could be replaced and why?

- Number of rural hospitals, availability of services in the region, and in the Province, medicare coverage for illnesses which are becoming more widespread.
- This needs to be broken down further.
- Section 21.1(a) [Readiness to learn]: This is not done enough in Manitoba schools. You can determine some children with learning disabilities this way.
- These are all important but hard to measure.

Do you have other comments on the health category?

- Quit centralizing everything!
- More indicators needed, to give a better appreciation.
- I haven't considered these. Presumably, the sustainability component is that "health now leads to health later" for future generations. Say so!
- Who's using the system, how, who will use the system in 20 years?
- Especially in rural areas there is a requirement to reverse the couch potato/Nintendo generation, to get back out on the land to use the benefits of our renewable resources to enhance our lives.

- You can have a child ready to learn, but if there is a barrier to their learning this index will only be helpful if follow up help is provided. There is no legislated mandate to help children with learning disabilities in Manitoba or Canada and there should be.
- I believe the determinants of health includes gender and culture as well.
- 21.2(a) [Potential years of life lost]: Cause of death may be increased [through] crime [rates.] must factor in [crime into the cause of] premature death.
- This [category] is interrelated to justice [category], etc.

22.0 Justice

The justice category deals with the security of individuals, and the systems necessary to protect them.

22.1 Issue: Effectiveness of the justice system

Efficiency, effectiveness and accessibility are key to the justice system. The ideal system provides not only for punishment of offences, but also for rehabilitation of offenders. It is important to track how well our justice system meets this description and where it falls short. The main obstacles to accessing the justice system are affordability and geographic access to libraries, lawyers, courtrooms and language translation services. The final indicator(s) for this issue should give us an overall picture of whether the criminal justice system is reducing crimes, particularly by repeat offenders.

Public Comments:

- So related to income.
- Reaching out to people in crisis before they get into trouble.
- Spending way too much money on jailing people for traffic offenses.
- Add an indicator: accessibility to the justice system by lower social-economic individuals.
- Indicator for the judicial system itself.
- Justice system ineffective/inefficient.
- Observe court: judges and lawyers – constant postponement.
- Youth justice [committee] successful.
- Everything does not need to go to court, lawyers.
- Need indicator to show effectiveness.

22.1(a) Indicator: Crime rate

This information would be presented by type of crime to persons or property. Spousal and child abuse and homophobic and other hate-related crimes would be discussed here, as would gang-related activities. It should be noted however, that there are a number of limitations with using crime rate as a measure of effectiveness of the justice system. Criminal justice policy may result in more crimes being reported, therefore causing the crime rate to rise. A multitude of social factors such as gender, age, socio-economic status, race, urbanization and mobility of populations also influence the amount of crime in the province. Some types of crimes have a high incidence of being unreported, and information is gathered on some types of crimes more than others. It is proposed that crime rate be used as a general indicator of criminal activity and be analyzed in conjunction with information on re-offender rates, victimization and public perception of safety (found in perceived quality of life category) to give a more complete picture of the effectiveness of the criminal justice system.

Public Comments:

- [Include] domestic violence.
- [Include]violent crime and age.
- [Include] sub-populations and incidence.
- How safe do community dwellers feel? Subjective component, perception of safety. Proposed indicators do not capture this.
- Need to recognize Fetal Alcohol Syndrome / Fetal Alcohol Effects individuals and ability to understand consequences.
- Separate [out] juveniles and adults in addition to type of crime.
- Whose interpretation of second sentence, i.e. abuse, homophobic, hate related? Vague – applies to criminal code?
- [Include] crime prevention.
- [Include] access to legal aid services.
- [Include] number of police officers.
- [Include] number of judges.
- [Include] number of crown prosecutors.
- Survey population to get more honest indication of amount of crime being committed.

22.1(b) Indicator: Re-offending rate

This indicator measures the re-offending rate of those who have served a sentence. Re-offending can be defined in many ways, including a new arrest, a new conviction or a new sentence. None of these definitions, however, can account for the individual who has returned to criminal activity, but has not been detected by the criminal justice system. Manitoba Justice is participating in discussions with other Canadian jurisdictions to formulate a common definition of re-offending. Collection of data will commence once agreement among jurisdictions is reached.

Public Comments:

- Rehabilitation is not captured adequately by the re-offending rate.
- More of an indicator. Needs to be considered in socio-economic factors. Return to same environment. No support to northern/isolated communities on return from jail.

22.1(c) Indicator: Victimization

This indicator would tell us the percentage of the population who were victims of a crime and circumstances of the crime. Studies have shown that more than half of criminal incidents are never brought to the attention of the police.

Public Comments:

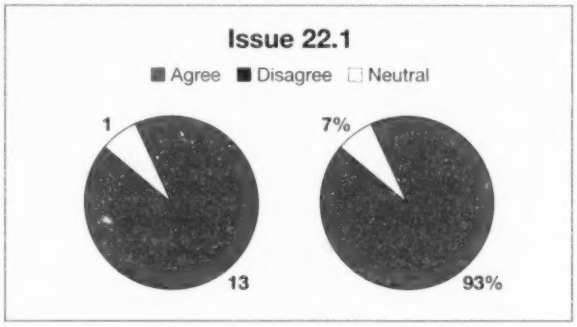
- Does not show that more than half of criminal incidents are never brought to attention of police.
- How does number determine effectiveness of the justice system?
- Perception you are not safe.
- Use community service as a way of providing restitution to victims of crime.

Staff workshop notes on public comments and questions not reflected in participants' notes:

- Crime prevention emphasis required. Virden has no judges in July, therefore no court cases are heard during this month. Need the staffing to keep the system going. The physical and social infrastructure.
- Crimes and victims statistics are important to be polled anonymously.
- Three indicators doesn't cut it. Youth Justice Committee successful. Look at models like this.
- Crime rate good to track. Sub-populations more susceptible. Add age of first offense and gender information.

Questionnaire Responses:

Do you agree that the issues presented in the justice category are the key areas to track to help determine sustainability in Manitoba?



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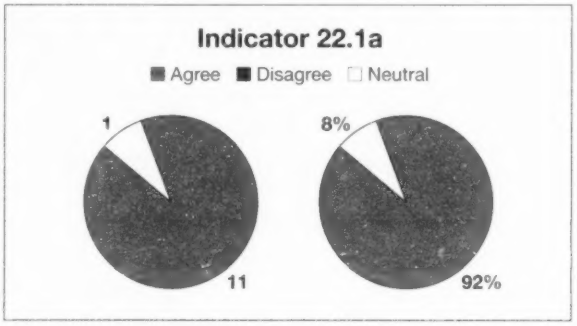
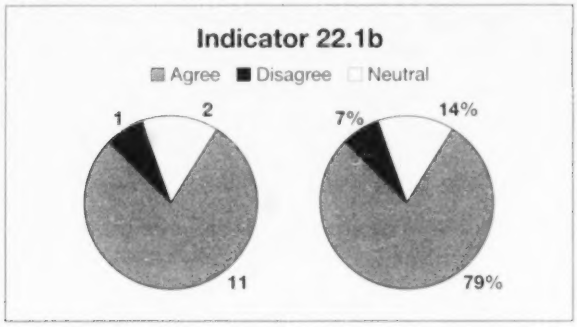
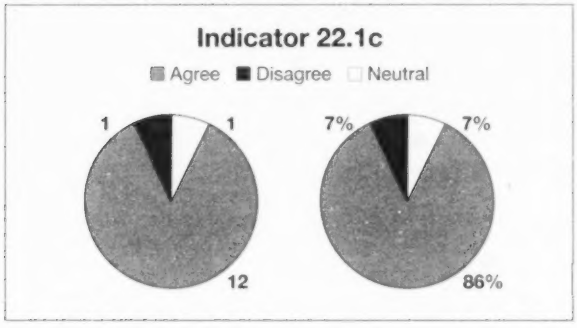






Are there alternative indicators that would better represent the issue, if so, which ones could be replaced and why?

- How many Victim-Offender Reconciliation Programs are offered in Manitoba? How many reconciliations have been conducted? What does this save us [in terms of dollars]? Quality of life? How do we measure the intangibles? How many offenders are in an Alternative Measures Program vs. in prison? What are the cost/benefits? How many towns have a Crime Prevention Plan or Social Development Plan?
- We need an indicator of the effort made to rehabilitate. What "need" in the individual is not being met?
- Crime stems from a host of social inadequacies that some people experience. You need to measure the amount of recreational facilities available and the amount of use made by people in core areas to determine if crime is to decline.

Do you have other comments on the justice category?

- Need demographic data to target action.

23.0 Perceived Quality of Life

The perceived quality of life category deals with questions related to how people perceive their quality of life, as individuals and within their communities.

23.1 Issue: Satisfaction with life

A person's quality of life influences his or her happiness and ability to contribute to society. How people feel about themselves and their particular circumstances affects how they feel about society and whether they will participate fully. Qualitative surveys repeated over time would display a trend in Manitobans' perception of their overall quality of life. Together with the quantitative indicators presented throughout, we should have a picture of the relative quality of life in the province.

Public Comments:

- There is a National Quality of Life indicator being developed by the Federation of Canadian Municipalities.
- City of Winnipeg's housing policy developed indicators – could be examined as part of this quality of life in-depth analysis.
- Difficult to judge: as a rural community, we are short-changed in areas of health services, education and justice system due to declining population. Also low perceived ability to play a role in decision-making – few in numbers.

23.1(a) Indicator: Perceived quality of life

This indicator would entail a compilation of qualitative survey questions directed toward a representative sampling of Manitobans. The following subject areas would be covered:

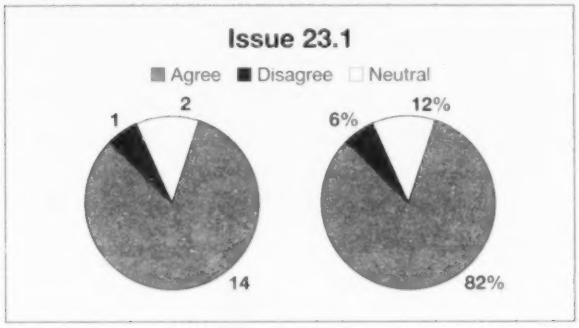
- Level of satisfaction with employment
- Perceived ability to influence decision-making
- Perceived safety / fear of crime
- Satisfaction with the justice system
- Satisfaction with the health system
- Satisfaction with the public education system
- Psychological well-being
- Perception of Manitoba as a good place to live, work and raise children

Public Comments:

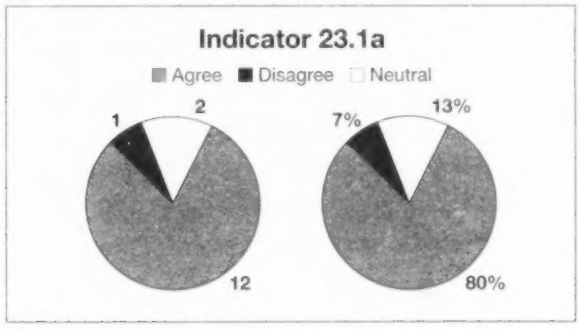
- Perception of Manitoba as a good place to live, work and raise children, AND RETIRE. Seniors [will be] one quarter of the population in the coming years.

Questionnaire Responses:

Do you agree that the issues presented in the perceived quality of life category are the key areas to track to help determine sustainability in Manitoba?



Given the indicator selection criteria, do the proposed indicators sufficiently address the issues?



Are there alternative indicators that would better represent the issue, if so, which ones could be replaced and why?

- [Include] level of taxation.
- I have just entered this site, and have not fully explored it. However, my first impression is that Manitoba is making great strides in even considering this issue. Great! My second impression is that the level of detail envisioned is extreme, and that more would be achieved with less detail. For example, I agree that the feeling of being able to influence decisions is a key indicator of quality of life. I would suggest that the participation rate in municipal elections is a better indicator than any survey, and much easier to measure. I encourage you to look for other similar and practical indicators rather than complex questionnaires.
- Not sure about this issue. Perhaps there are others that are more pertinent.
- I do not know how you will measure perception. It can change daily. If it cannot be measured accurately and consistently, then do not measure.
- This must be undertaken by qualified social scientists. Do not hire opinion poll groups. Use sociologists to assess this measure.

Do you have other comments on the quality of life category?

- Tough to analyze qualitative data accurately.
- Useful.
- So – "happy now, happy later".
- If it's worth doing the surveys, it's worth doing it right. They should cover a significant portion of the population and all regions. Follow-ups should have no real changes so they can use the initial as the benchmark.

General Workshop Comments on the Human Health and Social Well-being Category

- Our group has an intergenerational perspective.
- Need to be able to measure progress of sub-groups within regions, for example communities with no high school and statistics on low grade nine completion. Left out of graduation rates.
- Environmental section: recycling barely touched on, under-emphasized.
- Overlap of environment with human health and social well-being not made explicit in the indicators in this section. Quality of soil, air and water supply (and need to use bottled water), and levels of pollution [are all related to this dimension].
- Assess community awareness and behaviour in terms of relationship to the environment, e.g. availability and use of recycling services, public education on environmental issues.
- [Include] personal vehicle use versus alternative forms of transportation (public buses, walking, bicycles, train).

- Level of comfort of people [perceived] of the environment they live in (e.g. social, ecology, etc., threat of summer fires, stress of anticipated mine closure).
- [Include] non-formal recreational use of the natural environment, e.g. people going hiking, use of cottages, and organized activities in the outdoors, e.g. cross country skiing classes, outdoor programs for kids in school.
- Need for adequate and ongoing funding for indicator measurement.
- Indicators can be misused. We need to know what they mean, how to use them, how they were arrived at.
- Shouldn't draw conclusions from a single indicator.
- Use qualitative indicators, e.g. self-reporting.

Overall general comments on indicators, the workbook, data, etc.

- Some of the interrelationships and interactions that the workbook suggests will be studied are very difficult to define, describe and support with good data. It is great to say this but I believe implementation will be difficult without extremely sensitive statistical tools and very astute statisticians/scientists.
- Overall, we must also maintain the capacity to measure our natural environment. We need to fund this process which is terribly lacking at this time. We need to pay the professionals appropriately and keep them here in Manitoba. We cannot measure the natural world without adequate funding and government staff!
- One major thing: Sustainability for Manitoba must be for MANITOBA not just for Winnipeg. We are all Manitobans and we care about our land.
- Please don't enter [comments] into a computer without reading the comments.
- Data – there should be an indicator dedicated to available data – knowledge indicator.
- Regional indicators are needed, and values need to be tied to the indicators to determine which direction is good. Environmental indicators need to be presented on an ecozone/eco-region level, and each ecozone needs to develop their own development plans. The public needs to know about these indicators continually. Broadcast to the general public more often and publish all the time. There should be open databases that are updated/maintained quarterly and accessible. There is no excuse to not have this information constantly updated. Need government accountability tied to values, e.g. "x" number of people under poverty level is unacceptable.
- How available are the indicators to the public? Need a strategy to promote information to the public. Open databases, updated on a regular basis. Five year reporting requirement too long, need to publish more often.
- The overall indicator set for the economic dimension is too southern oriented.
- Faster access to statistics needed from Statistics Canada.
- Existence of a glossary in the workbook means it needs smaller words. Don't use big/complicated words.
- The whole indicator set has been too narrowed down, now there are not enough indicators. Need more indicators to show the true picture.
- Need for inventory of what we have, a baseline using many existing sources.
- Need the capacity to measure, through development of expertise in the field of data collection and monitoring.
- The workbook presentation is still too segmented. Linkages need to be highlighted more.
- Don't study things thirteen times while something gets worse and worse.
- Does government have the will and money to monitor these things? A concern. Basic ideas are there, but are they going to follow through and do it?

- For sustainability we need action based on the indicators.
- Enforcement is an indicator for all issues.
- Wanted to present solutions rather than provide feedback on indicators.
- Timelines for reporting of this information are off. This information, or parts of it at least, should be reported in the Winnipeg Free Press monthly, instead of five year timelines.
- Why aren't indicators value laden?

Two newspaper articles were submitted: *"Walkerton should be a wake-up call"* by David Suzuki, from the Sunday Metro, June 11, 2000; and *"The Whiteshell's squishy slime"* by Fred Cleverley, from the Winnipeg Free Press, June 12, 2000.

Two proposals were submitted: *"A Computerized Organ Donor/Recipient Matching Program"* (no date or author); and *"Proposal for a Water Conservation Strategy As an Alternative to Twinning the Shoal Lake Aqueduct"* by The Appropriate Technology Group, November, 1996.

One paper was submitted: *"The Social Dimension of Sustainable Development"* by Sherri Torjman from the Caledon Institute of Social Policy, May 2000.

One graph was submitted, with related text: *"U.S. Direct Investment in Canada Since World War II. 1946 to 1988 Inclusive."* By Mel Hurtig, November 7, 1989.

Written Submissions

Resource Conservation Manitoba Inc.

Dear Sir/Madam:

Enclosed is the written submission from the Resource Conservation Manitoba to the Provincial Sustainability Indicators Workbook. You will find that it is a much broader and more substantive response than allowed for by the questionnaire in the workbook. It first sets out a conceptual framework for understanding what is sustainability and, on the basis of that framework, enunciates a set of sustainability indicators. As such, it provides a well-grounded and clear rationale for the selection of sustainability indicators as they apply to the several dimensions of society encompassed by the Workbook.

We believe that the framework we present is very much in the mainstream of thinking about what constitutes sustainability and that it presents a subtle but important divergence from the heavy emphasis on economic growth which informed the previous government's vision of sustainability. In our view and that of much of environmental thinking about sustainability, sustainability is first and foremost about maintaining the carrying capacity of the natural environment and that economic and social practice must conform to the limits and requirements imposed by the limited capacity of the natural environment to absorb human demands upon it.

We encourage this government to revise its thinking about sustainability along these lines and to select those indicators which will help it choose economic and social practices which promote ecological sustainability.

Thank you for giving Manitobans the opportunity to participate in this important process and we trust you will find our comments helpful.

Yours Sincerely,
Harvey Stevens
President

Provincial Sustainability Indicators: Resource Conservation Manitoba's Perspective on What They Should Be.

Introduction

As a non-profit centre for applied sustainability which has actively promoted sustainable development practices since its original inception as the Recycling Council of Manitoba in 1985, Resource Conservation Manitoba (RCM) is pleased to see the publication of the workbook on Provincial Sustainability Indicators by the Manitoba Round Table for Sustainable Development. Like the Round Table, RCM believes a key component of societal action towards creating a sustainable future is the selection and ongoing measurement of those indicators which tell us how well we are progressing towards the goal of a sustainable society. We feel that the work presented in the workbook is an excellent beginning to the process of tracking that progress.

There is much in the workbook with which we are in agreement. It is a good beginning. However, the thrust of our critique is that it does not present an adequate description of what constitutes sustainability; and, given this, a number of the specific indicators are not appropriate and there are a number of key ones which are missing and should be included.

Accordingly, our comments will focus first on clarifying what is sustainability. On the basis of that understanding, we will propose an alternative set of major headings for the set of sustainability indicators and within each major heading propose the set of specific indicators we feel should constitute the content of the monitoring system.

Sustainability Defined

Our starting point is the observation made by the Ehrlich's that the economy is a wholly-owned subsidiary of the environment. Without the resources provided by the natural environment, we would not be able to build an economy; and, to the extent that we run down these resources, we compromise our ability to sustain ourselves. Thus, sustainability is first and foremost about protecting the integrity of the natural environment. Michael Jacobs' definition of 'sustainability' (The Green Economy, 1991) reflects this view:

> *"sustainability means that the environment should be protected in such a condition and to such a degree that environmental capacities (the ability of the environment to perform its various functions) are maintained over time: at least at levels sufficient to avoid future catastrophe, and at most at levels which give future generations the opportunity to enjoy an equal measure of environmental consumption." (pp. 79-80)*

This definition points to the first characteristic of sustainability – that of maintaining a requisite quantity and quality of the stock of 'natural' capital. In a similar fashion, we can talk about the sustainability of human-made and human capital and we will use this notion to identify indicators of sustainability for each of these types of capital.

A second characteristic of sustainability is that of operating within the limits imposed by the finite carrying capacity of the natural environment. If renewable resources are over-exploited, then the size of the stock diminishes and can disappear altogether. If non-renewable resources are not husbanded, they too are exhausted. If too much waste is dumped into the environment, it becomes polluted and its capacity to perform its basic life-giving functions of clean air and water is destroyed. Thus, a central task of living sustainably is that of knowing what is the carrying capacity of the natural environment and of living within those limits. It is only by living within those limits that the first condition of sustainability is met.

The third characteristic of sustainability addresses the belief and concern that trade-offs exist between achieving economic/social welfare and living within the carrying capacity of the natural environment: It is often felt that we can either have economic growth at the cost of a deteriorating natural environment or a pristine environment with slow economic growth but not both. As a challenge to this belief, the third characteristic of sustainability is that of maintaining and enhancing the level of social welfare while living within the carrying capacity of the natural environment. This can be accomplished in two ways.

The first is by using technology to both enhance the capacity of the natural environment to perform its essential functions and to minimize the environmental damage caused by the production of goods and services for human consumption. In many instances, human technology can be created to improve the quality and quantity of natural capital. It also can be made more efficient so that fewer environmental inputs are required to produce the same level of outputs and that less damage to the environment is caused by the production and consumption of goods and services. Thus 'ecological' efficiency becomes a key characteristic of sustainable human-made capital. Two examples of ecologically efficient technologies are those that lead to the restoration of wetlands and the development of hydrogen fuel cells to replace gasoline as a motive fuel.

The second way of maintaining social welfare while living within the carrying capacity of the natural environment is that of changing consumer tastes and preferences for those goods and services which do not run down the natural environment yet enhance quality of life. An example of this approach is that of substituting cross-country skiing for snowmobiling, as a form of winter recreation.

This second approach to enhancing social welfare may well be the more important of the two, as we are already exceeding the carrying capacity of many environmental systems and will have to reduce the absolute level of production of environmentally harmful activities to achieve environmental sustainability. If people can be persuaded to change their preferences to those activities which are environmentally benign, then they will maintain their level of satisfaction and, some would argue, even enhance it. This is the promise held out by those who promote the path of voluntary simplicity and it may well be the solution to living with fewer material goods while enjoying life more.

A fourth characteristic of sustainability addresses the concern that trade-offs exist between economic and social development. Capitalism has been a tremendous engine of economic growth and higher material standards of living. Yet, unbridled, it has been destructive of human community and of the environment. In response, the institutions of social welfare characteristic of advanced industrial countries were created to protect individuals from the socially destructive tendencies of capitalism. These protective social institutions grew considerably between the end of the Second World War and the early 1970's. Now, the push towards globalization and concerns about the adverse incentive effects of these institutions on decisions to work and invest are leading some sectors of society to push for their diminishment. Yet, the economic dislocations caused by globalization and freer trade and the growing disparities in income and wealth are leading other

sectors of society to demand curbs to freer trade and to more social protection. In the light of these tensions, the fourth characteristic of sustainability is the promotion of social welfare with economic growth via a pattern of economic development that minimizes social costs and supports social development.

As with the trade-off between economic growth and environmental protection, there are 'social' technologies; i.e. institutional arrangements that can minimize the trade-offs. The redesign of welfare programs to encourage and enable access to employment, the funding of programs that enhance early childhood development/readiness to learn, the replacement of leaky tax incentives/expenditures to businesses with targeted economic development programs are examples of how both objectives can be promoted.

To sum up, in our view, sustainability is first and foremost about the maintenance and enhancement of the natural environment's capacity to provide its life-giving services to society. This forms the fundamental constraint of human activity. Then, within the constraints imposed by the finite carrying capacity of the natural environment, sustainability is about promoting social welfare while minimizing economic disincentives. Thus, to rephrase the vision statement of sustainable development found on page 2 of the Workbook,

> "The vision for Manitoba is a pattern and level of economic and social development which is both environmentally, economically and socially sustainable. Our economy will produce goods and services in an ecologically efficient manner and not exceed the carrying capacity of the natural environment; and, our social institutions will ensure that social welfare is promoted in an economically efficient manner."

Given this understanding of sustainability – that of preserving and living within the carrying capacity of the natural environment while maintaining and/or enhancing social welfare – we can begin to fashion a set of indicators which reflect the degree to which these objectives are being met.

The Set of Categories for Presenting the Indicators

In terms of organizing the presentation of indicators, we have an alternate proposal for the major headings. Rather than the major categories of – environmental, economic, human health and social well-being – we would propose the following categories – natural capital, human-made capital and human capital. The term 'capital' is used in its broad economic sense – as a type of input to the production of goods and services, as distinct from the other type of input – 'labour'. It refers to the 'stock' of material on hand that can be used to create goods and services which satisfy human needs or to the natural, human-made and human 'assets' we possess.

As we noted above, 'natural' capital refers to the natural environment. 'Human-made' capital refers to the physical infrastructure of roads, sewers, buildings, technologies/tools and the social infrastructure of business, government/legal, community and family institutions. 'Human' capital refers to the educational and health status of individuals. As such, the term 'capital', as used here, does not refer to money.

We believe these categories are better suited to the development of a set of sustainability indicators for several reasons. First, just as one can speak of the sustainability of natural capital as that of maintaining a requisite quantity and quality of the stock, so too can one speak of the sustainability of human-made and human capital as doing likewise. Seeing the building blocks of human society as different types of 'capital' thus provides a common metaphor for understanding sustainability and a basis for selecting sustainability indicators for each domain. Second, seeing each as a type of 'capital' reinforces the idea that the creation of social welfare is a process of combining these forms of capital with one another. Most human needs cannot be met without the application of human-made capital to natural capital. And, increasingly, the development of human capital – our knowledge of the environment and what we are doing to it by our lifestyles and how we can change to live within its limits – is becoming increasingly important for our future survival. Third, seeing the building blocks of society as types of capital puts a correct emphasis on the size and quality of 'stocks' and not on the amount of flow, typically measured as income. We know that conventional national income accounts only measure flows and disregard what is happening to the quality and quantity of the underlying stocks of natural, human-made and human capital as those income flows are generated.

However, simply naming the types of capital which are relevant to the challenge of sustainability is not enough. The other challenge is that of discerning the kinds of developments with each type of capital which ensure the sustainability of the other types of capital.

The workbook alludes to this on page three when it says, "Tracking sustainability indicators will help us understand linkages, connections and interdependencies between our environmental, economic, health and social systems." However, we disagree that simply tracking the indicators will help us understand the linkages. That understanding only comes with an analysis of how behaviour in one area impacts on another. For example, we needed the scientific understanding of how carbon dioxide and other gases prevent infrared heat from escaping back into space to determine that the levels of greenhouse gas emissions in the atmosphere would be a good indicator of global warming and that the levels of such gases emitted by vehicles would be a good target for reductions. Ideally, the selection of indicators in each area should be on the basis of those factors or conditions which are known to affect conditions in another area.

With this understanding of sustainability, we turn to a review of the set of indicators presented in the Workbook. With each section, we first describe the key purpose of the indicators which thereby provides the overall criterion for selecting the appropriate set of indicators.

Sustainability Indicators of Natural Capital

Key purpose of the Indicators: To describe those characteristics of the natural environment which indicate whether we are maintaining or running down its capacity to provide its essential services of – providing resources, absorbing wastes and performing basic life-giving services and amenities.

We find the following indicators appropriate to the task of monitoring the sustainability of Manitoba's natural capital:

1.1 (a) Total designated and protected land;
1.2 (a) Pressure from development;
2.1 (a) Distribution of indicator and exotic nuisance species;
3.1 (a) Urban Air Quality Index (AQI);
3.1 (b) Greenhouse gas emissions;
4.1 (a) Manitoba Water Quality Index (WQI);
4.2 (a) Water consumption;
5.1 (a) Fish species diversity and population;
5.2 (a) Commercial harvest;
6.1 (a) Forest type and age class;
6.2 (a) Annual allowable cut versus actual harvest;
7.1 (a) Identified reserves versus minerals extracted;
7.2 (a) Leachate from mining sites;
8.1 (a) Soil quality;
8.1 (b) Risk of wind and water erosion on cultivated land;
9.1 (a) Change in land use

However, we would raise the following concerns about their measurement. First, is the sampling adequate to ensure local problems are spotted, e.g. water, air and soil quality? Second, the indicator for commercial (fish) harvest should be recast in the same way the indicator on annual allowable vs. actual tree harvest is measured. It should immediately tell us whether overfishing is occurring and by how much and for which species. Third, with respect the definition of 'annual allowable cut', is the level set at a sustainable level? Finally, there should be benchmarks developed for all these indicators so that we know whether critical limits have been reached.

In addition to these measurement concerns, we would recommend two additional indicators be added to the list:

- Indoor Air Quality
- Intensity of land development (population per square kilometre)

Given that Manitobans spend about 90 percent of their time indoors, Indoor Air Quality may have greater implications for human health than outdoor air quality. Indicators of indoor air quality already exist. Organizations such as Health Canada and ASHRAE (American Society for Heating Refrigerating and Airs Conditioning Engineers) have published guidelines on what are deemed to be acceptable levels for various indoor air pollutants. Data on the indoor air quality of Manitoba's building stock are available from research studies periodically done by Manitoba Conservation's Petroleum and Energy Branch, Canada Mortgage and Housing Corporation's research division, Natural Resource Canada's R-2000 program and the National Research Council's Institute for Research in Construction.

With respect to the intensity of land development indicator, the spread of low-density developments in the Capital Region has signaled unsustainable development – more commuting, greater loss of prime agricultural land, etc. Thus, it should be captured by the set of sustainability indicators.

Sustainability Indicators of Human-Made Capital

A. The Economy

Key Purposes of the Indicators: To describe, (a) the overall scale or impact of the economy on the natural environment; (b) the ecological efficiency with which natural capital is converted into goods and services for human consumption; (c) the level of economic welfare generated by human-made capital.

A.1 Indicators of Overall Scale and Impact

The two indicators listed by the workbook which reflect this and should be included in the set of indicators are:

12.1 (a) Ecological Footprint Index

12.1 (b) Waste disposal per capita

We agree that the ecological footprint index needs further work and refinement. A further refinement to the waste disposal indicator would be measures of the composition of the waste stream, to pinpoint those areas requiring the greatest effort.

A.2 Indicators of the Ecological Efficiency of Production Processes

The following four indicators listed in the workbook relate to this dimension of sustainability and should be included in a set of sustainability indicators:

11.1 (a) Energy efficiency – energy consumption per dollar of real GDP and per capita;

11.1 (b) Ratio of renewable to total energy consumption;

10.1 (c) Farms using sustainable practices – percent of all farms using sustainable practices;

13.1 (c) Companies integrating sustainable development – percent of all companies using environmental or sustainable development codes of practice, environmental management systems or ISO 14000 in their day-to-day practices.

However, we would like to see 11.1 (b) broadened to measure the mix of energy consumption in terms of its greenhouse gas emission profile. Thus, the consumption of gases like methane, propane and natural gas would be tracked separately and combined with other energy sources in terms of their GHG potential.

Also, the workbook does not describe what constitutes 'sustainable farm practices' and we would want the adequacy of the indicator reviewed before it was used as one of the measures. As well, we feel that far more is needed to monitor the ecological efficiency of production processes. Adoption of the practice of 'full-cost accounting', which looks at the total cost of the production of goods and services to not only the producing firms but society and the environment, would do much to capture the ecological efficiency of our production processes.

In the interim, we would recommend the following additional indicators be monitored:

Efficiency of production processes – these would exclude the productivity of labour. Instead, they would measure the ratio of outputs to natural and human-made capital inputs, likely expressed in dollars. The data likely could be derived from Statistics Canada's Input-Output tables.

Transportation efficiency – some measure of fuel consumed per kilometre driven or vehicle licenced and/or measures of the average fuel economy of the car/light truck and heavy truck fleet. As well, a measure of the "mode-split" of commuting to work, showing the percent of single-occupancy vehicles vs. more sustainable modes should be included. Data sources include Statistics Canada census and surveys, Winnipeg Transit and Winnipeg Public Works departments.

Levels of recycling – percent of materials diverted from the waste stream, likely based on weight.

The transportation sector contributes the highest percentage of greenhouse gas emissions of any of the sectors of the economy and the growth in emissions has been quite rapid. Thus, it is a key sector monitor, for efficiency improvements. Monitoring levels of recycling is an important complement to measures of the level of waste disposal.

A.3 Indicators of Economic Welfare

In considering indicators of economic welfare, both the overall level and the distribution of that welfare across individuals should be described. If an economy is generating a lot of income and wealth but the ownership is extremely skewed in favour of the wealthy, then a whole group of people are being left out of the economy and may be worse off than in earlier times when the economy was less wealthy overall. Thus, both dimensions have to be reflected in indicators of economic welfare.

Indicators of the Overall Level of the Economy

The one indicator listed in the workbook which falls within this heading is:

13.1 (a) Real GDP per capita growth rate

However, we would suggest that the absolute level of the real GDP per capita be measured as well as the growth rate.

As a complement to this measure, we would also recommend an indicator which measures the 'tax base'. This is important to monitor as it reflects the ability of the economy to fund public services. Any decline in the tax base requires higher levels of taxation to generate the same levels of government revenues.

Two options for measuring the tax base per capita indicator are

- Net National/Provincial Income, in real terms
- The federal/provincial equalization formula tax base.

The first is obtained from the national/provincial accounts data. The second would be available from the provincial finance department.

Indicators of the Distribution of Economic Welfare

Over the last ten years or so, there has grown up a literature documenting the 'disappearing middle class'. A number of measures have been developed for describing the changing income distribution away from the middle towards the top and bottom of the income scale. One measures the total share of income held by those in the bottom first or second and top fourth or fifth income quintiles. A more sophisticated measure of the degree of income polarization is that developed by Michael Wolfson of Statistics Canada, Divergent Inequalities — Theory, Empirical Results and Prescriptions. When tracked over time, both will show how evenly the changing size of the economic pie is being distributed.

We would recommend these measures be developed from the income data for Manitoba as contained in the annual Survey of Labour and Income Dynamics (SLID) or from taxation data as available from the Administrative Data Division of Statistics Canada. They should be based on either the 'earnings' or 'market incomes' of individuals and families, where 'market income' is defined as total income from all sources, less government transfer payments. We further recommend that these measures of distribution of market income replace those suggested in 18.1 (a) Income distribution and dependency.

B. The State/Quality of the Physical Infrastructure

Key Purposes of the Indicators: To describe, (a) the adequacy of the physical infrastructure to meet basic human needs; (b) the cost of maintaining the infrastructure in a good state of repair; and, (c) its ecological efficiency, where possible and appropriate.

The one indicator listed in the workbook which addresses the first purpose is:

15.1 (a) Population with adequate infrastructure.

This could be refined by reporting it separately for each type of infrastructure included in the list and by calculating it as a percent of total communities and total population in those communities.

There are two additional indicators which we recommend be added to measure the degree to which the other two purposes are being met:

- Cost of bringing the existing infrastructure up to an adequate state of repair – this indicator should be developed separately for transportation facilities and systems (roads, rail systems, transit systems, airports, sidewalks, etc.) sewers and water and buildings.
- Energy efficiency of buildings – total energy consumed to heat and light buildings per volume of space. This should be reported separately for residential, commercial and industrial spaces.

Information on the second indicator exists. Municipalities know the cost of repairs needed to their physical infrastructure. The report, Strategic Infrastructure Reinvestment Policy (SIRP) Report and Recommendations contains information for the City of Winnipeg. This cost should be related to some capacity denominator like the population or the tax base/fiscal capacity of governments.

The third indicator taps the efficiency dimension listed under the economy but is specific to buildings. The challenge in constructing this indicator would be that of estimating the volume of buildings.

C. The State/Quality of the Social Infrastructure

Key purposes of the Indicators: It is less clear what 'sustainability' means in the context of social institutions. In our definition of sustainability, we indicated that, to be sustainable, social institutions have to minimize economic costs and disincentives to work and invest. By doing so, they can remain affordable. However, this notion of sustainability fails to capture two other key functions of social institutions – those of creating human capacity and abilities; i.e. human capital, and of offsetting or minimizing the costs to the environment and to society created by economic institutions. As well, with 'third sector' institutions like the family, church and voluntary associations, sustainability has to

mean something else. One notion is sheer survival – do people continue to join/create these institutions and act to ensure their continuation. A broader notion is their ability to perform those functions necessary for the proper functioning of society. For example, families are key to providing children with a sense of security and belonging and confidence in themselves. When this doesn't occur then children are less able to learn well and more likely to engage in delinquent and criminal activity as they grow up. Given these several meanings, the purposes of sustainability indicators of the social capital of society are to measure (a) the capacity of our key social institutions to promote the welfare of all citizens in an economically efficient manner; (b) the level of public support for these institutions; and (c) their effectiveness in achieving their core purposes.

There are a broad array of social institutions for meeting human need and promoting social welfare. They include - the family, business, labour unions, the courts/legal system, health, educational institutions, religious groups, government, non-profit/volunteer sector. The workbook includes indicators that reflect the functioning of six of these – the voluntary sector, the family, government, health, education and the legal system. The indicators are:

19.1 (a) Participation rates in volunteer activities (Voluntary)
19.2 (a) Primary language spoken at home (Family)
20.1 (a) Voting rates (Government)
20.2 (a) Fiscal accountability (Government)
17.1 (b) Graduation rate (Education)
17.1 (c) Student achievement (Education)
21.1 (c) Access to health services (Health)
22.1 (b) Re-offending rate (Legal)

Some of these look like measures of 'human capital' acquisition which we will describe in the next section. They could be construed as such and there is a gray area between some of these measures and those reflecting the level and type of human capital acquired by individuals. In acknowledging the overlap, we would argue that the indicators in this section should reflect the purposes set out above. By comparison, indicators of the level and quality of human capital will measure the desired outcomes of several of these institutions.

Indicators of Institutional Efficiency

The only indicator which taps the efficiency with which public services are provided is 20.2 (a) Fiscal Accountability and then only indirectly. The relationship between revenues and expenditures and the size of the long-term debt is more an indicator of overall solvency than efficiency. As such, the indicator should relate the size of the long-term debt to the capacity of the economy to pay for it. A measure like long-term debt as a percentage of the GDP or Net Provincial Income would be a more appropriate one.

Other indicators of efficiency would relate the cost of core services like health and education to agreed-upon outputs like – overall cost per person seen/treated by the health care system. The Manitoba Centre for Health Policy and Evaluation may have developed such measures. With the education system, it would be the cost of education per student served. It is worth noting here that efficiency does not necessarily mean effectiveness. Measures of effectiveness are noted further on.

Indicators of Public Support for the Institutions

With respect to indicators which measure the health of the voluntary sector, measuring the level of volunteering is one facet. Levels of volunteering has been measured by two Statistics Canada surveys - the 1987 National Survey of Volunteer Activity and the 1997 National Survey of Giving, Volunteering and Participating. Manitoba-level results may be available from both surveys. Another measure, for which there is more regular data would be,

- Per capita donations to charities; or, donations to charities as a percent of after-tax income.

This is reported annually to Revenue Canada and captured on a regular basis by the Statistics Canada Family Expenditure Surveys.

Voting rates are an indicator of the health of the political process. Another measure of this would be,

- Donations to political parties, as a percent of after-tax income.

Primary language spoken at home is a measure of the degree to which the family attempts to preserve its cultural heritage. However, it should be expressed as a percent of all those whose ethnic origin reflects the primary language. This would be a better measure of the extent to which the language has been retained by those identifying with the ethnic group.

With the family, other indicators of the level of support for it, as an institution, would be overall and age-standardized marriage and divorce rates. The percent of children growing up lone-parent families or, the percent living in a lone-parent family at a given age-level;

e.g. 5 and 10 years, are indicators of the level of stability of and parental commitment to the two-parent family unit. They all reveal the growing fragility of the two-parent family.

Indicators of Effectiveness in Achieving Core Purposes

With the criminal justice system, indicator 22.1 (b) Re-offending rates may be a good indicator. However, to the extent that they can be manipulated by corrections authorities, the indicator will lack validity. This is a problem with a number of indicators from the criminal justice system. With the school system, indicators 17.1 (b) and 17.1 (c) are indicators of effectiveness. With the graduation rate indicator, however, it might be better to look at an indicator like the percent of 18 to 24 year-olds achieving a completed high school education, as a number of drop-outs return and complete their high school. Indicator 21.1 (c) is a measure of the effectiveness of the health care system.

Sustainability Indicators of Human Capital

Key Purposes of the Indicators: To describe, (a) the level and composition of the total population as it relates to the ability to reproduce and care for its members; and, (b) the level of skills and abilities of the population to create sustainable economic and social institutions.

A. Total Population

The workbook describes indicator 14.1 (a) as a "population index" and then goes on to note that it will include rates of births and deaths, male and female population by age, etc. Our first comment is that this is not an index by a set of measures of the population. An 'index' is one measure which summarizes a set of underlying measures. Instead of the set of measures proposed in the workbook, we would propose two population indices:

(a) The ratio of Total Fertility to Replacement Fertility rates;

(b) A 'dependency' ratio of the non-working age population to the working-age population or the percent the non-working age population is of the total population.

The first indicates whether the live birth rate is sufficiently high to replace population losses due to death. The second indicates whether the age structure of the population is shifting towards fewer working age people who generate most of the tax revenues to cover the cost of services to those not working.

Of the two, we feel the second is more useful. It can be influenced by immigration policies as well as family formation policies and more directly relates to other indicators like the size of the tax base for funding public services. It also puts less emphasis on population growth per se and more on the age-mix of the population. From a sustainability perspective, a growing population consuming at Canadian levels is not a good thing.

B. Population Skills and Abilities

B.1 Level of Knowledge and Skills

The workbook lists several indicators:

17.1 (a) Literacy rates

17.1 (b) Graduation rates

17.1 (c) Student achievement levels

21.1 (a) Readiness to learn

We would recommend that 17.1 (b) and 17.1 (c) are more appropriately measures of the effectiveness of the education system and belong in the previous section of the report. We would also recommend that 21.1 (a) be moved from the health section to this section. In addition, we would recommend that an indicator showing the highest level of formal education attained be added. The measure could show the percent of the adult, working age population (15-64) with a completed high school degree and a completed post-secondary (community college or university) degree.

B.2 Level of Physical and Mental Health

Sustainability indicators of health should measure those characteristics of the population which translate into low demand on the health care system. Thus, indicator 21.1 (b) healthy life choices index is a good indicator. We would also recommend retaining 21.2 (a) Potential Years of Life Lost and 21.2 (c) Ability to function. However, rather than retain 21.2 (b) Infant mortality rate, we would replace it with numbers and percent of low birth weight babies.

The workbook does not list any indicators of mental health. These should be added because of their implications for employability, life happiness and demand for services. Recently, there have been surveys measuring the level of stress people are under. This and measures of depression should be added to the list of sustainability indicators.

B.3 Level of Attachment to Work and Self-sufficiency

The workbook recommends a 'labour force index' (item 16.1), labour force composition (item 18.1 (b)) and 18.1 (a) Income distribution and dependency.

Our comments are several. First what is being proposed as a labour force index is not an index but a set of measures. Second, the employment-to-population ratio, the participation and unemployment rates are readily available but do not do a good job of measuring the 'level of attachment to employment'. They should be replaced with an indicator which measures the level of employment over the previous year which is available from the Survey of Labour and Income Dynamics (SLID). The percent with - no employment, some (Part-year/Part time) and full-year/full time employment is a better indicator of the level of attachment to the labour force. Another measure is those who have been out of employment for an extended period of time, e.g. 6 months or more. This is likely available from the monthly labour force survey and reveals the level of structural unemployment in the economy.

A negative measure of self-sufficiency is the percent of the working-age population whose 'major' (50%+) source of income is government transfer payments. This is captured by both the Census and the annual SLID. However, it should likely be measured at the level of the 'economic family' rather than the individual.

B.4 Perceived Quality of Life/Life Satisfaction Indicators

The workbook proposes a series of indicators of level of satisfaction with specific aspects of life. The interesting feature of these measures is their insensitivity to changes in the real material standard of living. People today are as satisfied with life as they were 50 years ago when the real standard of living was much lower. This is because perceived life satisfaction is a totally relative measure. People compare themselves not to a fixed standard but to where they were a year ago, to their neighbours, to where they want to be a year from now and judge themselves more or less satisfied. Accordingly, these measures are totally subject to the pernicious habit of continuously rising expectations which is at the root of the sustainability crisis.

On the other hand, if people are going to make the transition to a sustainable economy successfully, they will have to find satisfaction in non-material pursuits. A set of life satisfaction measures which tap the several domains over which people can find utility would help to capture the changing bases of overall life satisfaction. Thus, we would concur with the proposal to include life satisfaction measures that tap a range of areas of life and which also inquire about people's beliefs about those aspects of life which are the most and least important to their quality of life.

Summary

In this paper we are recommending that an appropriate set of sustainability indicators can be developed only on the basis of a clear understanding of what constitutes a sustainable society. We propose a view of sustainability whose central focus is the protection and enhancement of the life-sustaining capacities of the natural environment. Key to the protection and enhancement of the natural environment is living within the limits required to maintain its carrying capacity. Thus, the core set of sustainability indicators must describe those characteristics of our natural environment which tell us whether and to what extent we are exceeding the several carrying capacities of the natural environment. To this end, we recommend that the following set of workbook indicators be included in the overall list of sustainability indicators:

A. Sustainability Indicators of our Natural Capital

1.1 (a) Total designated and protected land;
1.2 (a) Pressure from development;
2.1 (a) Distribution of indicator and exotic nuisance species;
3.1 (a) Urban Air Quality Index (AQI);
3.1 (b) Greenhouse gas emissions;
4.1 (a) Manitoba Water Quality Index (WQI);
4.2 (a) Water consumption;
5.1 (a) Fish species diversity and population;
5.2 (a) Commercial harvest;
6.1 (a) Forest type and age class;
6.2 (a) Annual allowable cut versus actual harvest;
7.1 (a) Identified reserves versus minerals extracted;
7.2 (a) Leachate from mining sites;
8.1 (a) Soil quality;
8.1 (b) Risk of wind and water erosion on cultivated land;
9.1 (a) Change in land use.

To this list, we recommend that the following be added:

- Indoor air quality
- Intensity of land development (population per square kilometre)

B. Sustainability Indicators of our Economy

Given the core focus of maintaining the carrying capacity of the natural environment, we recommend that an appropriate set of sustainability indicators of our human-built capital will describe those characteristics that promote the attainment of this central goal. For the functioning of the economy, we recommend those indicators that describe its size or impact on the natural environment and the degree of efficiency it demonstrates in using natural resources to provide goods and services for human consumption. They include,

B.1 Indicators of the Overall Scale and Impact of the Economy

12.1 (a) Ecological Footprint Index

12.1 (b) Waste disposal per capita

B.2 Indicators of the Ecological Efficiency of Production Processes

11.1 (a) Energy efficiency - energy consumption per dollar of real GDP and per capita;

11.1 (b) Ratio of renewable to total energy consumption;

10.1 (c) Farms using sustainable practices – percent of all farms using sustainable practices;

13.1 (c) Companies integrating sustainable development – percent of all companies using environmental or sustainable development codes of practice, environmental management systems or ISO 14000 in their day-to-day practises.

We recommend the following additional indicators of ecological efficiency be monitored:

- Productivity of production processes – these would exclude the productivity of labour. Instead, they would measure the ratio of outputs to natural and human-made capital inputs, likely expressed in dollars. The data likely could be derived from Statistics Canada's Input-Output tables.
- Transportation efficiency – some measure of fuel consumed per kilometre driven or vehicle licenced and/or measures of the average fuel economy of the car/light truck and heavy truck fleet. As well, a measure of the "mode-split" of commuting to work, showing the percent of single-occupancy vehicles vs. more sustainable modes should be included. Data sources include Statistics Canada census and surveys, Winnipeg Transit and Winnipeg Public Works departments.
- Levels of recycling – percent of materials diverted from the waste stream, likely based on weight.

Our definition of sustainability also contains a focus on the level of social welfare generated by our economic and social institutions. For us, a sustainable society is one that enhances social welfare while living within the carrying capacity of the natural environment. As we noted above, this can occur by producing goods and services more efficiently and by changing our preferences to more environmentally benign goods and services that meet human need. Thus, economic growth, per se, is not an indicator of sustainability. In fact, given current consumption patterns, it is likely an indicator of unsustainability. More important is the level of social welfare generated. Thus, while we list measures of the overall size of the economy as sustainability indicators, we do so with the major qualification that it is the composition of the economy and the nature of the distribution of goods and resources among individuals that are the key sustainability features.

B.3 Indicators of Economic Welfare

Indicators of the Overall Level of the Economy

- 13.1 (a) Real GDP per capita growth rate
- Real GDP per capita
- Tax base per capita indicators:
  - Net National/Provincial Income, in real terms
  - The federal/provincial equalization formula tax base.

Indicators of the Distribution of Economic Welfare

- Measures of the polarization of individual and family income, from earnings and total income.

C. Sustainability Indicators of the Physical Infrastructure

With these, we note that the current state of repair of the infrastructure and its ecological efficiency in meeting human need are the two key dimensions which should be tapped by indicators.

- 15.1 (a) Population with adequate infrastructure
- Cost of bringing the existing infrastructure up to an adequate state of repair – this indicator should be developed separately for transportation facilities and systems (roads, rail systems, transit systems, airports, sidewalks, etc.) sewers and water and buildings.
- Energy efficiency of buildings - total energy consumed to heat and light buildings per volume of space. This should be reported separately for residential, commercial and industrial spaces.

D. Sustainability Indicators of the Social Infrastructure

In our view of a sustainable society, social institutions exist to build and sustain human capacity, to promote economic activity and to protect the environment and people from the negative effects of economic activity. Given these purposes, sustainability indicators of our social institutions will measure the capacity of our key social institutions to promote the welfare of all citizens in an economically efficient manner; (b) the level of public support for these institutions; and (c) their effectiveness in achieving their core purposes.

Indicators of Institutional Efficiency

- 20.2 (a) Fiscal Accountability (Government)
- long-term debt as a percentage of the GDP; or,
- long-term debt as a percent of Net Provincial Income;
- cost per person seen/treated by the health care system;
- cost per student served.

Indicators of Public Support for Social Institutions

- Percent of population engaged in volunteer activities
- Per capita donations to charities; or, donations to charities as a percent of after-tax income
- Voting rates
- Donations to political parties, as a percent of after-tax income.
- Percent of population of a given ethnic origin whose primary language is spoken at home.
- Age-standardized marriage and divorce rates
- Percent of children living in a lone parent family by ages 5, 10 and 15

Indicators of Effectiveness in Achieving Core Purposes

- 22.1 (b) Re-offending rates
- 17.1 (b) Graduation rate
- 17.1 (c) Student achievement
- percent of 18 to 24 year-olds achieving a completed high school education
- 21.1 (c) Access to health services

E. Sustainability Indicators of the Population

In our view, sustainability indicators of the population should describe the capacity of the population to reproduce and care for its members and the level of skills and abilities of the population to create sustainable economic and social institutions.

Indicators of Population Capacity

- The ratio of Total Fertility to Replacement Fertility rates;
- A 'dependency' ratio of the non-working age population to the working-age population or the percent the non-working age population is of the total population.

Indicators of Population Skills and Abilities

- 17.1 (a) Literary rates
- 17.1 (b) Graduation rates
- 17.1 (c) Student Achievement levels
- 21.1 (a) Readiness to learn
- percent of the working age population (15-64) with a completed high school degree and a completed post-secondary (community college or university) degree.

Indicators of Population Level of Physical and Mental Health

- 21.1 (b) Healthy life choices index
- 21.2 (a) Potential years of life lost
- 21.2 (c) Ability to function
- number and percent of low birth weight babies
- reported stress levels
- percent of population with a major depression

Indicators of Level of Attachment to Work and Self-sufficiency

- Level of employment over the last year (none/part-year, part-time/full year)
- Percent of adult population whose 'major' (50%+) source of income is government transfer payments

Indicators of Life Satisfaction

- 23.1 (a) Perceived quality of life within specific areas
- Areas of one's life that provide the greatest and least satisfaction
- Beliefs about the areas of life that are most and least important to one's satisfaction and happiness in life.

Ducks Unlimited Canada
Don Sexton

Attached are some comments on the Manitoba Round Table public consultation document regarding Sustainability Indicators for Manitoba as provided by Ducks Unlimited Canada. Please note that these have been limited to select portions of the "Environmental Dimension" Category.

Manitoba Round Table
Provincial Sustainability Indicators

Most of the following general comments are related to the Environmental Dimension although some would be appropriate for the other dimensions.

General Comments

- Government should be commended for this initiative. The challenge will be to ensure the indicators are relevant and that meaningful, accurate data is readily available or can be easily collected and as new technology to measure becomes available can be updated.
- As such there will need to be a commitment to ensure the collection of data required to monitor selected indicators so that reporting will be meaningful.
- Since our understanding and perception of sustainability continues to change there should be a commitment to periodically review the suite of indicators to ensure that new, relevant, indicators can be included and redundant ones get removed or modified.
- Selected indicators should be easy to measure – otherwise costs for monitoring will become prohibitive.
- It is important that the indicators are monitored and reported on the basis of ecological vs. administrative boundaries. Need to ensure the scale of the ecological boundary is appropriate for the indicator. Suggested scale is in some cases the Ecoregion although it may be more appropriate for some indicators to report at a larger (Ecozone) scale or smaller (Ecodistrict) scale.
- There is the need to establish targets for each indicator within some range of acceptable variability (perhaps natural variability). Without a set of targets and a range there will be the potential to simply monitor the decline of a certain indicator vs. being committed to doing something once it goes outside an established threshold. The basis of the threshold and /or limits should be clearly identified as to source e.g. published literature etc.
- There will be the need for the development of a method for rapid assessment of many indicators. Traditional means of collecting information will need to be challenged in an effort to secure quick but accurate information. For example, the Forest Inventory is updated every 10-15 years or so on selected portions of the province which may not be often enough for the established reporting periods.

Section 1.0 Biodiversity and Habitat Conservation

- Implies this only refers to public land. Is this correct? It is critical to include an assessment of private land (what about prairie habitat and associated species?). This is especially true where much of a particular land type exists on private land.

Section 1.1 Natural Lands and Protected Areas

- Why restrict the proposed indicator to protected areas? This assumes that a network of protected areas represents all habitats in the province. This is unlikely – particularly on private land. There is a need to track loss of native/natural habitats on private land as this has been and will likely remain the area that is most highly threatened. Loss on public land could be very small but large on private land large over a period of time, and suggested approach in document would indicate everything was "fine"!
- Need to track all Crown land, and designated land use over time i.e. Crown land's overall net value first and foremost are the sum of the values it provides to the collective group of Manitobans (all of them), I believe. Correct? Suggest tracking changes in habitat types over time.

Section 1.2 Issue: Habitat Loss

- Is restricted to Crown land only? Need to include all lands including private land since in some cases (e.g. prairies) this is the only place where certain habitats area found (e.g. short grass prairie, Minnedosa potholes region).
- Having only one indicator for habitat is not enough. The problem with just using the proposed indicator is that habitat can still be degraded but not get measured. Example: could lose old forest habitat type due to fire, or a wetland could be impacted but is not measured since the landscape is not fragmented.
- Suggest evaluating/measuring "habitat" types over time. For upland habitats this could simply be monitoring cover type by age over time. Source data include Manitoba FRI and remotely sensed data.
- Need to also measure changes in wetland habitats.

Section 2.0 Wildlife

- Why is fish isolated from wildlife, see Sec 5.1? A Wildlife Policy for Canada includes fish as wildlife.
- Relating to economic indicators for wildlife could consider tracking number of hunters, number of licenses, or number of Ecotours etc. as an indication of the economic contribution of wildlife.

Section 2.1 Species Diversity

- It will be difficult to select appropriate indicators of species diversity. The challenge will be to select a suite of indicators that truly indicate the variety of species that are found in Manitoba. Further it will be difficult to select an indicator that can be easily monitored over time.
- Suggest tracking species at risk (i.e. the number of Vulnerable, Threatened and Endangered species, including plants and fish) found in Manitoba (by Ecoregion) as a suitable indicator. The CDC uses a recognized tracking system for all species found in Manitoba, including species at risk. Most other wildlife have poor quantitative data available especially for populations and population change over time (But see below re waterfowl). Also some species have very dynamic populations, are migratory etc. and nature of monitoring must be sensitive to this. In many cases, maybe most data will indicate or suggest a trend rather than an absolute population and we currently lack a baseline for many species i.e. in unimpacted habitats.
- For Migratory waterfowl could use the current USFWS/CWS data as an indicator. This data is collected annually across a number of ecoregions of the province and is a long-term data set.

Section 3.0 Air

- No comment

Section 4.0 Water

- Information should be tracked by watershed or sub-watershed for some watercourses, within defined ecological boundary (e.g. Ecoregion or Ecodistrict).

Section 4.2 Water Quantity and Use

- Need to ensure that wetlands are included as part of the equation. Suggest tracking the number and type of wetlands over time.
- The proposed indicator tracks water consumption, which addresses the water use, not water quantity. Suggest selecting an indicator that tracks quantity over time (e.g. stream flows, lake levels etc) for selected watercourses/ lakes.

Section 5.1 Fish Conservation and Biodiversity

- Good indicator – suggest selecting representative lakes within a selected ecological boundary (e.g. Ecoregion).
- Should also track vulnerable, threatened and endangered fish as well (see earlier comment under wildlife).

Section 5.2 Fish Harvest

- Good indicator but why restrict to the lakes noted. Should choose representative lakes within a selected ecological boundary (e.g. Ecoregion) and possibly consider "control" lakes that are not harvested to try to establish baselines or comparative approaches.

Section 6.1 Conservation of Forest Diversity

- Good indicator, however, recommend tracking by Ecoregion – Ecozones are very large landscapes (only 2 forested Ecozones in Mb).

Section 6.2 Forest Harvest

- In the preamble there is reference to monitoring current harvest practices and forest regeneration but no reference to monitoring sustainable harvest levels. This reference should be made since the proposed indicator tracks the Annual Allowable Cut vs. Harvest.

- The proposed indicator should be tracked based on ecological boundaries.
- Suggest two other indicators related to regeneration.
  - Track the amount of Not Sufficiently Re-Stocked (NSR) lands.
  - Track the status of Free-To-Grow vs. Area harvested for a given year.

These have been suggested since it is necessary to ensure the forest is recovering from disturbance to a certain stocking level, and, that the regenerating stand will continue to grow and become a stand available for future harvest.

Council of Women of Winnipeg
Nellie Patson, President

Response to the Provincial Sustainability Questionnaire

The Council of Women of Winnipeg (CWW), together with the Provincial Council of Women in Manitoba (PCWM) and the National Council of Women of Canada (NCWC) have policies and experience relevant to some of the indicators.

4.0 Water

CWW, in accordance with the policy of NCWC, is opposed to all privatization of water. In addition, to the indicators listed for this section we recommend that another indicator be the number of private/public partnerships (such as the Cartier water system) in existence in the province. While some might see this as a positive indicator, other groups, including us, would see it as a cause for concern. In either case the information should be there.

Another concern we have about water is the subsidization of water services to facilitate urban sprawl. Another indicator we would like to see is reduced public subsidy to supplying water to new residential developments on the peripheries of Manitoba's urban centres.

In our experience of appearing before Municipal Boards with respect to land use plans, we have found that the province has inadequate data on aquifers. More research needs to be done to make this a meaningful indicator.

7.0 Minerals

There is no such thing as sustainable extraction of finite resources. By definition their extraction can only be prolonged, not sustained.

9.0 Land Use and Human Settlement

Along with the PCWM, CWW supports the Provincial Land Use Policies of the Province of Manitoba. Compliance with these policies needs to be a major indicator of sustainable land use in the province.

10.0 Energy

CWW has supported the Green Commuting Program of Resource Conservation Manitoba. Central to that program is the recognition that transportation is the largest contributor of greenhouse gases in Manitoba (28%). Reduced automobile use is a key component to meeting our commitments at Kyoto. Petroleum production is expected to peak by 2010. Thereafter, further extractions will then be much more costly. We need to act now to preserve a fair share of this non-renewable resource for our children and grandchildren. Reduced per capita consumption of gasoline should be an indicator.

We would also like to see all the background material that goes into measuring indicators put into a public registry. The public should not be forced to go through Access to Information to get data that should be public and should not be subject to additional charges.

Private Citizen #1

Public Meeting in a Closed Room

Public participation requires first that we receive the public document you produce at least two months before the meeting or more.

We all work unpaid in busy schedules.

We need public funding for quality presentations to match what business and their governments produce together.

Each table of eight is isolated and under control and notes manipulated.

We need to all have a chance at a microphone over two or three days.

We all need to hear each individual presentation and with jeers or cheers to agree or disagree in public singly and together, the whole room together.

It all needs to be cable TV broadcast at least two times. It is five times more important than House of Commons broadcast daily.

As it is we are in a closed room and almost no public

and so it is not public. We have little interchange among participants at a table. The moderator controls all, makes notes.

It's on private property and man who rents the room controls all.

Since 1965 I have taken part in hearings gradually perfected to control thwart citizens needs for good of Canada.

Private Citizen #2

Quality of Life Contradictions

People could make much more use of local natural resources without affecting their sustainability. Personal harvest of resources such as berries, fish, wildlife, fuelwood, mushrooms, etc. would put more of the people back out on the land where they would soon re-develop a "love for the land" and thereby be more knowledgeable about sustainability, not to mention the "income in kind" that this mode of living would produce.

This is not addressed in the sustainability exercise and certainly is not being fostered by government, in fact it is impeded at every opportunity. Permits for even dead and down firewood salvage are charged out at ever increasing rates, when in fact they shouldn't be required at all. Fish limits are set with the nonresidential lodgeowner in mind to try and discourage people that want to take fish to eat. Only domestic fishing by Aboriginals is grudgingly allowed where in most areas all the fish but game fish go unharvested. Roads (some built with taxpayers' money) that lead to great berry or mushroom areas are blocked to prevent their use for fear that someone may use them to hunt from. If over hunting is the problem that problem should be addressed with enforcement action rather than limit legitimate users.

Although some lip service is devoted to domestic use of wild plants and animals (Policy Area 3, Development and Use in the Wildlife Workbook), it is always in the context of "subsistence harvest", giving the connotation that unless you are a destitute person you shouldn't be making personal use of the resource. Virtually all civil servants in the resource field are focused on the task of protecting natural resources and a very complex set of rules has evolved. In reality the public might be better served in a sustainable environment sense, if a large number were redirected to assist people to make more use of the vast amount of sustainable resources that presently go unused. Why not have more resource extension people in rural areas? Why not a few Ag-reps in the north to foster gardening.

There would definitely be some health benefits as well. There is definitely a requirement to reverse the couch potato/Nintendo generation to get back out on the land to use our resources. Benefits besides income in kind would be exercise, healthy food without chemicals, less landfill, and more importantly better family mental health.

Action Plan for Sustainable Development

Once the process determines the best possible indicators, goals that move us toward the ideal of sustainability must be formed and it is imperative that EVERY department of government shown here, be required to annually report to the legislature on the status of their progress. This already is hopefully going to be adopted for the resource departments (i.e. 4.7c of Wildlife Workbook). These have to be special reports and not appended to some annual report. The source for information to evaluate the indicators throughout the workbook often seems to be government reports now available. They are often just statistics, and statistics ARE NOT indicators in the raw form. Even the present five year reports to the legislature are sometimes flawed. For instance the current 5 year report on fisheries makes assumptions that Wild Rice production is detrimental to fish species and I am not aware of any proof of this??

At any rate when the indicators are finally flushed out and goals are set, the departments should redirect a portion of their staff to tracking their progress in a meaningful way. If this process is followed to a meaningful conclusion, the end goals should hopefully be the principle reason for a department to exist and therefore should receive the highest priority. Perhaps it should be a legislated requirement.

Thank you for the opportunity to participate in the process.

Private Citizen #3

- Natural lands and protected areas indicator would be a report card annually.
- Habitat loss: simplistic to tie in only with roads – what about marshes? Define roadless – all weather, winter, seasonal? Habitat loss from fires, floods, insects, etc. and those trends impact in time frames. Only deals with Crown lands, what about private land losses? Revisit and compare Canada Land Inventory information. Number of trees planted, hectares of habitat development projects, permanent water areas, riparian zones, etc. Use Manitoba Habitat Heritage Corporation, Ducks Unlimited, Canadian Wildlife Service, etc. information.
- Air quality: use UV indices, number of high-risk days.
- Water: number of incidences of water quality crises, number of communities with water conservation programs, legislation violations re: pollution, number of landfill sites, leakage incidences.
- Fish conservation: why no mention of recreational fishing, subsistence use?
- Forest indicator: it states that AAC is based on sustained yield…should be sustainable yield!
- Minerals: indicator is number of communities closed or threatened with mine closure.
- Soils: indicator is number of conservation farming operations. Also, number of shelterbelts; annual supply of trees to shelterbelts.
- Human settlement: age composition in communities to track egress.
- Agricultural viability: indicator is number of alternatives and agri-venture operations per year, hectares out of agriculture per year.
- Energy: number of alternative energy operations, number of demonstrations, program sign ups.
- Consumption: number of landfill sites, number of communities with garbage surcharges, number of communities with recycling programs.
- Infrastructure: include an index for recreational facilities.
- Education and training: include special needs assistance, ratio.
- Community participation: membership trend is important, number of active service clubs per community, number of miles of highways adopted by organizational service clubs.
- Heritage: number of designations, language teaching, ethnic traditions courses, dancing groups, ethnic festivals.
- Citizen participation: number of advisory boards, advisory committees, degree of activity.
- Health: teen pregnancy, number of alternative health programs, preventatives, treatment rates versus prevention rates.
- Justice: youth crime rate, re-offenders rate, number of alternative penalty systems and outcomes, i.e. fine option.

Web Site – Discussion Board Submissions

Posted by: Private Citizen (Certified General Accountant) on August 02, 2000 at 14:42:30.

Last day for comments! Well, I couldn't let this forum go by without seeing a single message. Guess it's up to me.

I read through the workbook and for the most part they look great. The whole idea of developing indicators that track performance on a wide range of life-impacting factors is long overdue. Economic factors currently get far too much attention, and can, as a result, lead to unbalanced public policy that ignores other equally important factors.

So while I don't know much about the more scientific indicators, I like the general idea of tracking them.

One indicator I am concerned about is the use of GDP. GDP is one of the most widely known and reported economic indicators. It is constantly referred to in business news and even makes it onto national TV newscasts. It gets one message across: economic growth is good. Problem is — and the rationale underlying this indicator project — economic growth and our well-being ain't necessarily the same thing!

I realize you plan to discuss the limitations of GDP in your reports, but that'll just wind up as the fine print no one notices. What would be useful is something along the lines of the Genuine Progress Indicator (GPI) from your friends at Redefining Progress. I'm afraid the familiarity of GDP will overshadow the other indicators in your project. People will just read the GDP indicator and see all these other indicators and not know how to link them together. The GPI will summarize all the indicators for easy comparison with the GDP.

The GPI is an attempt to make the GDP a more useful indicator. You could think of it as GDP Plus. It includes the economic contributions of household and volunteer work, but subtracts factors such as crime, pollution, and family breakdown. And it has the important bonus of being easily reported on the nightly news in two seconds before the commercial break. The media will have to distinguish it from GDP, and in so doing will knock some of the wind out of GDP's sails: GDP's limitations will be exposed.

As an accountant, I realize the significant weakness of the GPI is its heavy reliance on estimates and that creates a reliability problem. However, in the accounting world there is always a tension between reliability and relevance. So while the GDP is perhaps a more reliable figure, its relevance is sorely lacking due to the information it does not contain (e.g., environmental and social costs; unpaid work). On the other hand, the GPI is a more relevant figure due to its broader perspective, however its reliability is shaky due to the use of estimates. Still, I think the two figures taken together will get the message across that our well-being is linked to more than just the economy.

A short comment on the ecological footprint — don't give up on it! The workbook sounded like you'd already tossed the idea out on its ear, but someone twisted your arm to put it in for consideration. Again, the relevance of the ideas underlying the footprint have enough value in themselves, and should overcome any concerns about reliability.

And, finally, have you looked at the work of the Ryerson Social Reporting Network at Ryerson U. in Ontario? They've developed some qualitative labour indicators which might be more useful for your project than just the traditional unemployment numbers. Their website is:
http://www.research.ryerson.ca/~ors/research/job.html

Well, this has been fun. I haven't got a lot of spare time, but if you need interested citizens for some sort of panel or working group, I might be lured into it.

Sustainability Indicators Workshops Evaluation Sheets Summary

1. **Do you feel the objectives of the workshop were met?**

Rankings	Participants' Responses
Not at all	0
Somewhat	5
Moderately	35
Mostly	47
Completely	2
Abstained	3
Total Responses	**92**

Comments:

- Not enough time.
- Two levels general and specific got confused.
- I was with a very animated and thoughtful group – the material already done by those before us was a good starting point for us.
- Acoustics was difficult.
- I wasn't clear on the objectives.
- The facilitator needed to keep the discussions on track so we could break out into small group sooner. Too much time spent on background which was copied from the workbook anyway.
- Some of the groups were more productive and focused than others.
- Longer session. Opportunity to discuss every topic.
- We needed more time on each topic.
- Acoustics and reporting from groups was poor re: hearing and understanding.
- Not always focused on indicators, but on problems with certain issues.
- Not enough people.
- Given that we did as much as we could.
- To explore elements and definitions.
- Time factor, one evening just a hint.
- Good discussions and participation.
- There is only a certain amount of information you can cover in a one-time session. You can't expect to cover things adequately in one evening. A series of workshops in our city is needed.
- Midway between three and four. Need more time for discussion, both within and between groups. This was a very worthwhile effort. Hope that the government takes it seriously and acts on it.
- I am not sure there was a clear understanding that we were working on measurement tools/processes rather than actions to address perceived issues.
- More indicators could have been developed.
- Perhaps a bit more definition of what is and is not an indicator.
- Workbook was hard to follow.
- Written input provided for consideration.

2. **Do you feel that your input was effective in contributing to the outcomes of the day, therefore useful?**

Rankings	Participants' Responses
Not at all	1
Somewhat	13
Moderately	34
Mostly	37
Completely	6
Abstained	1
Total Responses	**92**

Comments:

- I wanted to participate in all the small groups, so maybe have one area as the topic each evening for people. E.g. Monday is environment, Tuesday is economic, etc.
- My views were incorporated into the presentation. What happens to them after that remains to be seen.

- Little – the reporter substituted his own views for the most part. This reporter substituted his own views for everyone else in the group!
- Small groups – lots of input.
- Not enough time to get all topics and views addressed.
- In some aspects.
- It opened up thought processes to be able to follow guide or brainstorm freely.
- Expressed needs.
- I hope, otherwise our time as volunteers is not of much value to the government.
- Hopefully.
- We had a good round table discussion, but we all felt somewhat limited as to the depth of detail on each issue we could discuss.
- Broad discussion can be enlightening to all.
- My perception of what we said around the table was not necessarily reported accurately by our spokesperson, in my opinion.
- Better personal background knowledge in some areas would have helped.
- Every discussion table needed someone to facilitate and focus the discussion in addition to participating in the discussion itself and in addition to the overall facilitator. Also have a good grasp of sustainable development concepts.

3. Do you feel the workshop's breakout group process was useful?

Rankings	Participants' Responses
Not at all	0
Somewhat	2
Moderately	21
Mostly	49
Completely	16
Abstained	4
Total Responses	**92**

Comments:

- Yes. Meet some interesting people.
- Good to hear other ideas.
- Very useful personally – new insights, perspectives from table mates.
- Appreciate knowing that a group of people is dedicated to doing something concrete about sustainability in all areas.
- Concern with acoustics. Very difficult to hear, even with microphone! In general session breakout groups good!
- Acoustics were terrible for large group presentations. Our table discussions were okay.
- I sat in on two groups. One worked the other did not.
- Good exchanges, but not enough time.
- Worked well, everyone was involved and spoke their mind.
- Group was too small for breakout sessions. Would have been better interaction with more.
- Yes, given the time it would have been impossible to have all groups cover all sections.
- Provided this effort is utilized!
- Break off "rooms" would have been better.
- It allowed more time and thought to be spent on specific areas.
- These types of groups need facilitators at the table to help keep the focus.
- But need more time for discussion.
- Had to do it in this form in order to cover the material over the length of time allowed. If everyone wanted to comment in all areas of indicators, would have been at least a one-day workshop.
- Can't imagine doing it any other way.
- Unsure that an integrated concept discussion was then facilitated in isolated groups, but do understand the efficiency issue.
- Provided an opportunity for full participation by working in small groups.

- The objectives will be met, only if the indicators reflect the input.
- Enjoyable.
- Noted a great deal of time was needed for each area for discussion.

4. How helpful was the facilitation of the workshop?

Rankings	Participants' Responses
Not at all	1
Somewhat	6
Moderately	27
Mostly	35
Completely	11
Abstained	12
Total Responses	**92**

Comments:

- Might have been helpful to have facilitator at each table familiar with process.
- Did it exist?
- Facilitator should do "courtesy" things also at the beginning. E.g. where are the bathrooms? Direct us to the munchies.
- Gets you thinking and other persons input sometimes clicks.
- It was helpful but not consistent enough as groups tend to ramble off the issue.
- They did the job very well.
- As before, each table required a sub-facilitator and better definition of term indicator and purpose of indicators.

5. How helpful was the workbook in guiding your discussions?

Rankings	Participants' Responses
Not at all	0
Somewhat	6
Moderately	22
Mostly	40
Completely	11
Abstained	13
Total Responses	**92**

Comments:

- Though if I'd read it before coming it would have been useful.
- I wish I had it before the workshop, so I could have read it before.
- Sorry not read before.
- We often strayed to discussion of society in general and how we'd fix it – but ultimately came back to the indicator work.
- Let us pick at weak areas and think of new areas.
- Indicators not good – too general.
- My problem – I hadn't read it prior to the meeting.
- The workbook shows the general bias and attitude of authors, workshops, the economy.
- Too detailed. A lot of study and material which most people do not have.
- Not enough time to go through it properly.
- We referred to it quite often to help answer our questions. Without the workbook we would have lost focus.
- There's always a problem in having to deal with specifically labelled categories when they are closely related to others.
- I think the workbook did a good job of identifying indicators. I am not sure the participants all picked up on the intention/direction of the workbook.
- Our group decided to focus more on the northern aspect.
- I wish I would have had an opportunity to read it first.

6. How helpful was the introductory presentation on the indicators initiative?

Rankings	Participants' Responses
Not at all	2
Somewhat	7
Moderately	30
Mostly	32
Completely	5
Abstained	16
Total Responses	**92**

Comments:

- Missed it.
- Missed it! Venue changed.
- Concise.
- NA (I came in late).
- Two ladies allowed the discussion to run away and we wasted time.
- Missed, so can't say.
- Perhaps more detailed about the nature of indicators.
- It was good, yet I had many questions afterwards. We had to move on to the breakout sessions.
- Perhaps there needed to be more discussion on what an indicator is - a measure, not a solution.

7. Did the workshop meet your needs and expectations?

Rankings	Participants' Responses
Not at all	1
Somewhat	13
Moderately	30
Mostly	31
Completely	3
Abstained	14
Total Responses	**92**

Comments:

- Didn't know what to expect.
- Too many ideas for short time.
- I didn't have expectations. I didn't know what I could contribute.
- I had no preconceived expectations. I appreciated the opportunity to comment.
- Because I'm impatient to see results.
- Again, I am not sure we focused appropriately on indicators rather than proposed solutions to the issues.
- Wasn't sure what to expect.
- I have confidence that the different workshops will be integrated.
- I really didn't know what to expect.

8. Additional comments.

- We had a good time at our table.
- Not enough time, I will complete the questionnaire.
- Our recorder was terrific. Jennifer knew which points were important and which were superfluous. She presented our opinions with style. Lise and Sara are taking this in university and had terrific input and Gene and David gave us practical and realistic information. A great group!
- Most groups strayed into proposing solutions rather than just indicators.
- I will read and think separately.
- Good group at our table!
- Frustrating to go to the wrong site (Aboriginal Round House) and so arrive late!
- Could have been in afternoon. Too long 3 1/2 hours, 6 – 9:30, time going to and from meeting hard.
- Building not conducive to large group discussions.
- The layout of your document is very well done.
- The room is not appropriate. Sound echo.

- Couldn't hear a thing. This location is acoustically horrible. No matter how close the chairs are you just can't hear with or without microphones.
- Please use other area.
- Limited resolves, problems clear, indicators questionable (more specifics are needed).
- So much was lost because of the acoustics!
- The acoustics are terrible! The place is not suitable for this kind of event.
- Some general comments on the workshop:
  1. The location is unsuitable for this type of meeting. The acoustics are terrible.
  2. At least one reporter offered up his own views rather than the conclusions of the group.
- Longer sessions!
- Must include other locations, especially Aboriginal communities.
- I hope to see concerns addressed in the Sustainability Policy. I would also like an economic analysis conducted in certain policies i.e. environment: protected areas. Thank you.
- Lack of time.
- This needs more time than just three hours.
- This is too short a period to do justice to the topic.
- I have learned about the "Sustainability Act" and its predecessor, but I'm still curious to know if this required setting up an entirely new government structure? (Fiscal Accountability!)
- What direction will the government of the day take? Will this workshop prove useful?
- All of this sustainability indicator measurement will require substantial increases in existing government funding. We need to build the capacity to measure. If we don't have sufficient funding your measurements will mean very little.
- Glad to see that major problems/issues are recognized.
- Enjoyed this - I believe in sustainable development as a way of life, not just a way to develop a community or country.
- I'll read the book now, and look at the Web.
- Book too complicated.
- Still considerable discussion and unaware of other region's discussion.
- Exercise is not about any goals collecting information. So often we are looking at process, can't we get past that?

Appendix 1

Sustainability Indicators Working Group
Past and Present Members as of June 29, 2000

WORKING GROUP CO-CHAIRS

Manitoba Conservation
Tammy Gibson (CT)
Krista Nakrieko (CT)
Laurie Streich (CT)

MEMBERS

Association of Manitoba Municipalities
Steven Lupky

Centre for Indigenous Environmental Resources
Merrell-Ann Phare (CT)

City of Winnipeg
Joan Wiens (CT)

Endangered Spaces Campaign, WWF
Gaile Whelan-Enns

Environment Canada
Susan Eros

Healthy Child Manitoba
Leanne Boyd/Rob Santos

International Institute for Sustainable Development
Peter Hardi (CT)
Laszlo Pinter (CT)

Keystone Agriculture Producers
Weldon Newton

Manitoba Aboriginal and Northern Affairs
Michelle Richard

Manitoba Agriculture
Herb Schellenberg/Ken McGill

Manitoba Association of Mining
Ed Huebert

Manitoba Chamber of Commerce
Ilija Dragojevic (CT)

Manitoba Conservation
Colleen Andreychuk (CT) (Natural Resources)
Emil Kucera (Environment)
Robert Witzke (Petroleum & Energy)

Manitoba Conservation Districts Association
Don Alexander

Manitoba Consumer and Corporate Affairs
Denis Mager

Manitoba Culture, Heritage and Tourism
Pat Tooth

Manitoba Eco-Network
Currently Vacant/formerly Alex Morrison

Manitoba Education and Training
Christina McDonald

Manitoba Family Services and Housing
Paul Vincent (CT) (Family Services)
Chris Leach (Housing)

Manitoba Federation of Labour
Peter Walker

Manitoba Finance
Michael Rennie

Manitoba Health
Susan Roberecki (CT)

Manitoba Heavy Construction Association
David Gylowoychuk

Manitoba Highways and Government Services
Amar Chadha/David Barham (Highways)
Henry Voth (Government Services)

Manitoba Hydro
Ryan Kustra

Manitoba Industry, Trade and Mines
Juliane Schaible/David Sprange (CT) (Industry)
Chuck Jones (Mines)

Manitoba Intergovernmental Affairs
Jennifer Rogers (Rural Development)
Andrew Cowan (Urban Affairs)

Manitoba Justice
Tom Hague

Manitoba Labour
Barry Warrack

Manitoba Metis Federation
c/o David Chartrand

Manitoba Model Forest
Mike Waldram

Manitoba Pork Council
Marcel Hacault

Manitoba Treasury Board Secretariat
Fran Gropp/Jacqueline Blay

Manitoba Wildlife Federation
Gene Whitney

Natural Resources Institute
Slobodan Simonovic (CT)

Science Teachers Association of Manitoba
Dan Forbes

Manitoba ON-SITE
Alex Morrison (CT) (formerly Eco-Network)

(CT) denotes Core Team members

Appendix 2

Manitoba Round Table for Sustainable Development

Sustainability Reporting Sub-Committee

(Through September 22, 1999)

Honourable J.G. Cummings,
Minister of Natural Resources – Chair

Honourable James McCrae,
Minister of Environment

Honourable Linda McIntosh,
Minister of Education and Training

Ms. Christine Common-Singh

Mr. Jack Dubois

Mr. Bill Elliott

Mr. David Hatch

Associate Professor T. Henley

Ms. Jenny Hillard

Mr. Jonathan Syms, Youth Round Table

Ms. Christina Waddle, Youth Round Table

Appendix 3

Sustainability Indicators Definition

Sustainability indicators provide information on the key vital signs of Manitoba's environment, economy, human health and social well-being. The indicators measure change/progress toward the vision of sustainable development as identified by Manitobans in The Sustainable Development Strategy for Manitoba (1994)'. Information gained through tracking indicators over time can enhance the decision making process to help ensure present and future needs of Manitobans are met.

[1]The vision for Manitoba is economic growth which is environmentally sustainable. In our vision the environment will be clean, safe and healthy; and our economy will provide the ongoing wealth and ability to provide the goods and services for both present and future generations of Manitobans in an environmentally sound manner.

- Sustainable Development Strategy for Manitoba 1994.

Sustainability Indicators Selection Criteria

- **Provides Links:** Is the indicator useful in linking environmental, economic, social and human health concerns and benefits?
- **Policy-relevant:** Does the indicator have relevance for policy decisions for all people?
- **Understandable and easy to interpret:** Can the indicator be presented in an easily understandable, appealing way to the target audience?
- **Credible and acceptable:** Does the indicator measure something that is important to you and your community? Is the information based on scientific, traditional or community knowledge? Is it reliable, trustworthy, and relevant?
- **Valid:** Is the indicator based on an established form of information collection and measurement, either through scientific, traditional or community knowledge? Will the information be collected in the same manner from year to year?
- **Available and accessible:** Is the indicator based on good quality information that is obtainable and accessible over time, at a reasonable cost?
- **Sensitive to change:** Is the indicator sensitive/responsive enough to small changes in the system, while still adequately reflective of the long-term trend? Is the measure at the proper level of subtlety to reflect the issue at hand? Will it give an early warning of the issue and reflect incremental change?

Ideally, an indicator should meet all the above criteria. However, in practice, it is rare for all criteria to be met in a single indicator. For example, an indicator that is understandable and easy to interpret may oversimplify the issue. Overall, the indicator set needs to be as balanced as possible in terms of the coverage and representation of issues. Choosing only indicators that match all the criteria specified above would mean that some important issues would not be covered.